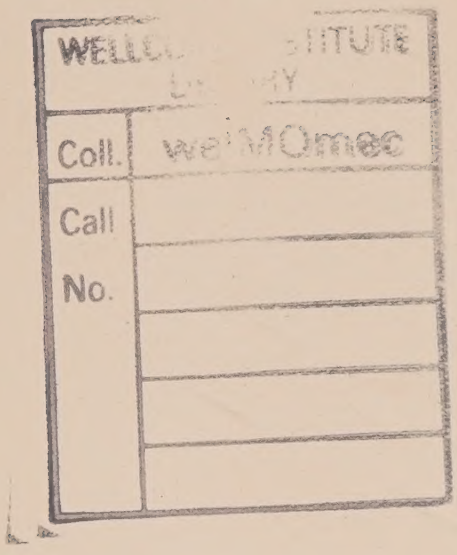
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STATISTICAL REVIEW

OF

ENGLAND AND WALES

FOR THE YEAR

1937

(New Annual Series, No. 17)

TEXT

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LIST OF CORRIGENDA IN THE STATISTICAL REVIEW.

YEAR 1936—TEXT.

Table XXXIII (page 53). Last column.

Mortality per 1000 living, 1936. Females.
Disease of Blood Vessels, etc.: 5·3 *should read* 15·3.

Table XCIV (page 152).

Cause No. 137. Diseases of the prostate.
Column for October: 2·3 *should read* 12·3.
Cause Nos. 140–150. Pregnancy and Childbearing.
Column for October: 16·59 *should read* 6·59.

Years 1931–1937.—Part I. Medical.

Table 7 (page 27).

International List No. 63 (1). Rickets (excluding spinal curvatures of undetermined nature).

64. Osteomalacia.

For these two causes a combined rate is shown for the years 1921 to 1930.

Delete brackets *and read* the rates as relating only to 63 (1) Rickets. The rates for Osteomalacia for 1921 to 1930 are not available.

YEAR 1937. Part I. Medical.

Table 14 (page 53).

Heading of last column:

9–1 months *should read* 9–12 months.

Table 23 (page 178).

International List No. 72 (*b*) (1). Aleukæmia (lymphadenoma) *should read* from Jan. 1937 as

M 29, 26, 36, 32, 22, 31, 28, 29, 24.
F 21, 15, 17, 20, 15, 13, 23, 15, 16.

and 72 (*b*) (2). Aleukæmia (agranulocytosis) *should read* from Jan. 1937 as

M 1 2 2 — 2 4 — 5 —.
F 4 1 3 3 2 2 2 7 5.

STATISTICAL REVIEW, 1937.

Note.—Of the tables referred to below, those numbered in Arabic will be found in "Tables, Part I—Medical," and those lettered in "Tables, Part II — Civil," while those numbered in Roman numerals appear in the text of this volume.

DEATHS.

A Hundred Years of Death Registration.

In this, the 100th Annual Report of the Registrar-General, it is fitting that brief reference should be made to some of the changes in mortality which have occurred during the past century. The First Annual Report, dated 18th May, 1839, dealt with the records of the first year of birth, marriage and death registration, from 1st July, 1837 to 30th June, 1838.

The number of deaths registered during that year was 335,956 in an estimated population of about 15·2 millions, or, when correction was made for the effect on the first year's total of the few days' delay between occurrence of a death and its registration, the total was 338,660. In the calendar year 1937, the number of deaths registered was 509,574 in a population of about 41 millions. The crude death rate has fallen, therefore, from about 22·3 to 12·4 per 1,000 persons during the century, but owing to the great changes which have taken place in the age composition of the living population this does not give a true picture of the real improvement in mortality. If the 1937 death rates of males and of females separately at 12 age groups had been operative in the population as it is estimated to have been constituted at the end of 1837, the deaths in the year ending 30th June, 1838, would have totalled 141,700, instead of 338,660, that is to say 58 per cent. of the persons who died in that year would not have died, or to express it in another way, the population of 1837 suffered a mortality 2·4 times as great in that year as it would have done if it had been exposed to the rates of 1937. The improvement has been greater for females, their ratio being 2·54 compared with 2·26 for males.

The amount of improvement has been very different at different ages and Table I shows that it has been maximal for children of school age, for at ages 5–15 no less than 4·6 times as many children died in 1837–8 out of each 1,000 living as was the case in 1937. The corresponding ratio for children under 5 is 4·0, for young adult males about 3·4 and for young adult females about 3·8. After 35 it diminishes with advancing age to about 1·1 at ages over 75. The extent of the decline ranges, therefore, from about 80 per cent.

for girls of 5–15 years to about 10 per cent. for persons over 75. The great reduction in mortality during childhood coupled with the

Table I.—Deaths at various ages in year ending 30th June, 1838, compared with the numbers which would have occurred if the death rates of 1937 had been operative at each age.

Age group.	Males.			Females.		
	No. of Deaths from mid-1837 to mid-1838.*	Calculated number at 1937 rates.†	Ratio of (2) to (3).	No. of Deaths from mid-1837 to mid-1838.*	Calculated number at 1937 rates.†	Ratio of (5) to (6).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0– ..	70,557	18,615	3·79	61,880	14,792	4·18
5– ..	7,909	1,796	4·40	7,695	1,579	4·87
10– ..	4,235	1,027	4·12	4,541	910	4·99
15– ..	5,336	1,569	3·40	6,234	1,413	4·41
20– ..	6,726	1,964	3·42	7,236	2,019	3·58
25– ..	11,730	3,451	3·40	12,872	3,391	3·80
35– ..	11,253	4,137	2·72	11,135	3,389	3·29
45– ..	11,155	6,570	1·70	10,222	4,733	2·16
55– ..	12,763	9,477	1·35	11,985	6,886	1·74
65– ..	14,478	12,339	1·17	14,435	10,631	1·36
75– ..	12,193	11,484	1·06	13,033	10,917	1·19
85 & over	4,006	3,683	1·09	5,051	4,912	1·03
All ages..	172,341	76,112	2·26	166,319	65,572	2·54

* Age distribution of deaths in England and Wales taken from table on page 53 of Registrar-General's First Annual Report, corrected by distributing the 874 deaths of unknown age and 2,704 whose registration was delayed.

† Calculated by applying the death rates of 1937 given in Table XXVIII of this Review to the estimated population by sex and age at the end of 1837.

fall in the birth rate has had a remarkable effect upon the age distribution of the deaths registered in a given year, as shown in Table II. Whereas a century ago nearly 40 per cent. of deaths were of children under 5, the proportion is now about 9 per cent., and the proportion of deaths at ages 65 and over has changed from 18 to over 50 per cent.

Mortality did not decline at a uniform rate throughout the century, however. The standardized death rate per 1,000 persons in quinquennial periods ranged from 20·6 to 22·4 between 1841 and 1875, and then began to fall. The infant mortality rate, estimated to have been about 150 per 1,000 live births in 1837–38, was still 153 in 1891–1900 and not until 1901 did it begin to fall rapidly, although improvement in the mortality rates of later childhood commenced at a much earlier date. In Table III the rates of survival of those children who were alive at ages 1–2 in 1837 and who were afterwards subject to the mortality rates of subsequent years in England and Wales at the appropriate ages as they grew

up have been calculated by means of the death rates at successive age periods in successive years.

Table II.—Proportions of deaths at various ages out of 10,000 at all known ages registered during the years ending 30th June, 1838, and 31st December, 1937.

Age group.	Males.		Females.	
	1837–8.	1937.	1837–8.	1937.
0– ..	2,347	780	1,937	597
1– ..	1,747	234	1,784	209
5– ..	705	188	736	173
15– ..	700	313	810	290
25– ..	1,333	923	1,443	888
45– ..	1,388	2,850	1,335	2,343
65– ..	840	2,473	868	2,366
75 and over	940	2,239	1,087	3,134
All ages..	10,000	10,000	10,000	10,000

The children aged 1–2 at the middle of 1837 and who survived until the census of 1841 were then 5 years old (i.e. between $4\frac{1}{2}$ and $5\frac{1}{2}$ years); those who lived until 1851 census were 15 years old and so on, and if there had been no migratory movements of population between England and Wales and other countries, or if these movements had balanced one another at each age and the incoming population had been of the same healthiness as the outgoing, the numbers of survivors at a census year calculated from the successive death rates ought to agree with the numbers at the appropriate age who were actually enumerated at that census. Table S shows, however, that there was, between 1871 and 1929 a large outward balance of migration, and this was probably true also of the period 1837–1870. This outward movement must have consisted mainly of young adults and unless the survivors of these returned home in later life or unless there was a considerable excess of inward over outward movement of elderly people in the latter half of the century, it would be anticipated that the census numbers at ages 75 and 85 in 1911 and 1921 would be considerably less than the survivors to those ages calculated on the assumption that no migration occurred.

The census numbers (and, in brackets, the calculated survivors out of the numbers enumerated at 4–6 in 1841 according to Table III) were as follows :—

	Males.		*Females.*	
Ages 4–6 years in 1841 ..	433,562		436,387	
74–76 ,, 1911 ..	71,879	(87,162)	100,232	(112,614)
84–86 ,, 1921 ..	15,546	(15,578)	28,214	(29,774)
94–96 ,, 1931 ..	605	(621)	1,667	(1,777)

Table III.—Numbers estimated as having survived to various ages, out of 10,000 boys and girls who were aged 1–2 years in 1837, 1867, 1897 and 1927, compared with the expectation of survival based upon death rates in 1937.

Age in years = x.	Numbers of survivors to age x out of 10,000 children aged 1–2 at middle of the year stated.				
	According to death rates in England and Wales in subsequent years.*				Expected from 1937 death rates†
	1837.	1867.	1897.	1927.	1937.
Males—					
5 ..	9,073	9,004	9,360	9,741	—
10 ..	8,682	8,690	9,189	9,628	9,727
15 ..	8,451	8,543	9,097	—	9,669
20 ..	8,160	8,353	8,957	—	9,569
25 ..	7,825	8,127	8,714	—	9,435
35 ..	7,087	7,592	8,380	—	9,149
45 ..	6,172	6,924	—	—	8,704
55 ..	5,081	5,994	—	—	7,780
65 ..	3,571	4,681	—	—	6,033
75 ..	1,824	—	—	—	3,302
85 ..	326	—	—	—	—
95 ..	13	—	—	—	—
100 ..	1	—	—	—	—
Females—					
5 ..	9,087	9,017	9,379	9,767	—
10 ..	8,704	8,724	9,202	9,666	9,753
15 ..	8,460	8,573	9,107	—	9,699
20 ..	8,136	8,375	8,980	—	9,611
25 ..	7,809	8,159	8,781	—	9,491
35 ..	7,086	7,676	8,478	—	9,228
45 ..	6,310	7,121	—	—	8,870
55 ..	5,424	6,385	—	—	8,214
65 ..	4,075	5,314	—	—	6,929
75 ..	2,345	—	—	—	4,432
85 ..	620	—	—	—	—
95 ..	37	—	—	—	—
100 ..	2	—	—	—	—

* Calculated by starting from census population aged 5–6 in June, 1841, adding half the deaths at 4–6, 3–5, 2–4, 1–3 in the four preceding years, and reducing resulting population to 10,000; the survivors to 5 exactly were then calculated, and those to subsequent ages by multiplying successively by the probabilities of survival obtained from quinquennial death rates up to age 25 in 1841–5, 1846–50, etc., and the appropriate decennial rates at subsequent ages up to 85 in 1861–70, 1871–80, etc.; the last 15 years were then calculated from smoothed death rates in successive years.

† Starting from the life table population at 1–2 years reduced to 10,000. (Abridged life table calculated by Snow's method.)

There was, therefore, a remarkable agreement at 85 and 95 with the enumerated population at advanced ages, indicating that the migratory movements during the century did not, in fact, have the effect of either increasing or decreasing the residual population of old people resident in England and Wales to any appreciable extent. At ages 74–76, however, there was a deficiency at 1911 census of some 15 thousand males and 12 thousand females.

Table III also compares the survival rates of the children aged 1–2 years in 1837 with those of the same age 30, 60 and 90 years later, and also with the expectation of survival of children aged 1–2 in 1937 if they continue to be exposed to the death rates of 1937 at each age. It is apparent that whereas only 709 out of each thousand boys aged 1–2 in 1837 reached their 35th birthday, 838 out of 1,000 boys aged 1–2 in 1897 reached that age, and according to present expectation, even assuming no further fall in death rates, 915 out of 1,000 boys aged 1–2 in 1937 should attain that age. For girls the improvement is still greater, the survivors per 1,000 to age 35 being 709, 848 and 923 respectively. Comparing rates of survival to the 65th birthday experienced by children aged 1–2 in 1837 with those expected according to 1937 mortality rates, the proportions for boys have improved from 357 to 603 per 1,000, and for girls from 407 to 693 per 1,000.

Diagrams 1 and 2 show the survival curves in graphic form and it is possible from the curves to compare the ages by which the boys or girls aged 1–2 in 1837, 1867 or 1897 were reduced by a given fraction, and the corresponding ages according to the expectation based on English Life Table No. 9 for 1920–22 or upon 1937 death rates. It is apparent, for example, that whereas only four-fifths of the 1837 boys reached their 22nd birthday, four-fifths of the 1937 boys may expect to reach their 52nd birthday even if no further decline in mortality occurs. The mortality experienced by the 1837 girls reduced their numbers from 1,000 at ages 1–2 to 846 at 15 years of age and to 631 at 45, and the potential life time available for motherhood (assuming this to be limited to ages 15–45) averaged about 22·3 years per head. According to 1937 mortality 970 may expect to reach the 15th year and 887 the 45th year out of 1,000 aged 1–2, the potential number of reproductive years of life averaging 26·5 years per head or 4 years longer, or, if allowance is made for the raising of the marriage age to 16, about 3 years longer.

The diagrams also demonstrate the divergence between survival as envisaged by a life table and the survival which is actually realised. Thus the children aged 1–2 years in 1897 were those born at the middle of the period 1891–1900 from whose mean annual death rates the English Life Table No. 6 was calculated, and if they had survived at the rates expected according to the life table the two curves would have been coincident instead of divergent. The crossing of the life table curve for 1891–1900 and the realized survival curve for children born 30 years earlier, at about 52 years for males and 54 for females, likewise indicates in graphic

DIAGRAM 1.

SURVIVAL CURVES OF POPULATIONS OF BOYS AGED 1–2 YEARS IN 1837, 1867 AND 1897 (CONTINUOUS LINES) AND, FOR COMPARISON, THOSE EXPECTED FROM LIFE TABLES BASED UPON THE DEATH RATES OF 1891–1900, 1920–22 AND 1937 (BROKEN LINES).

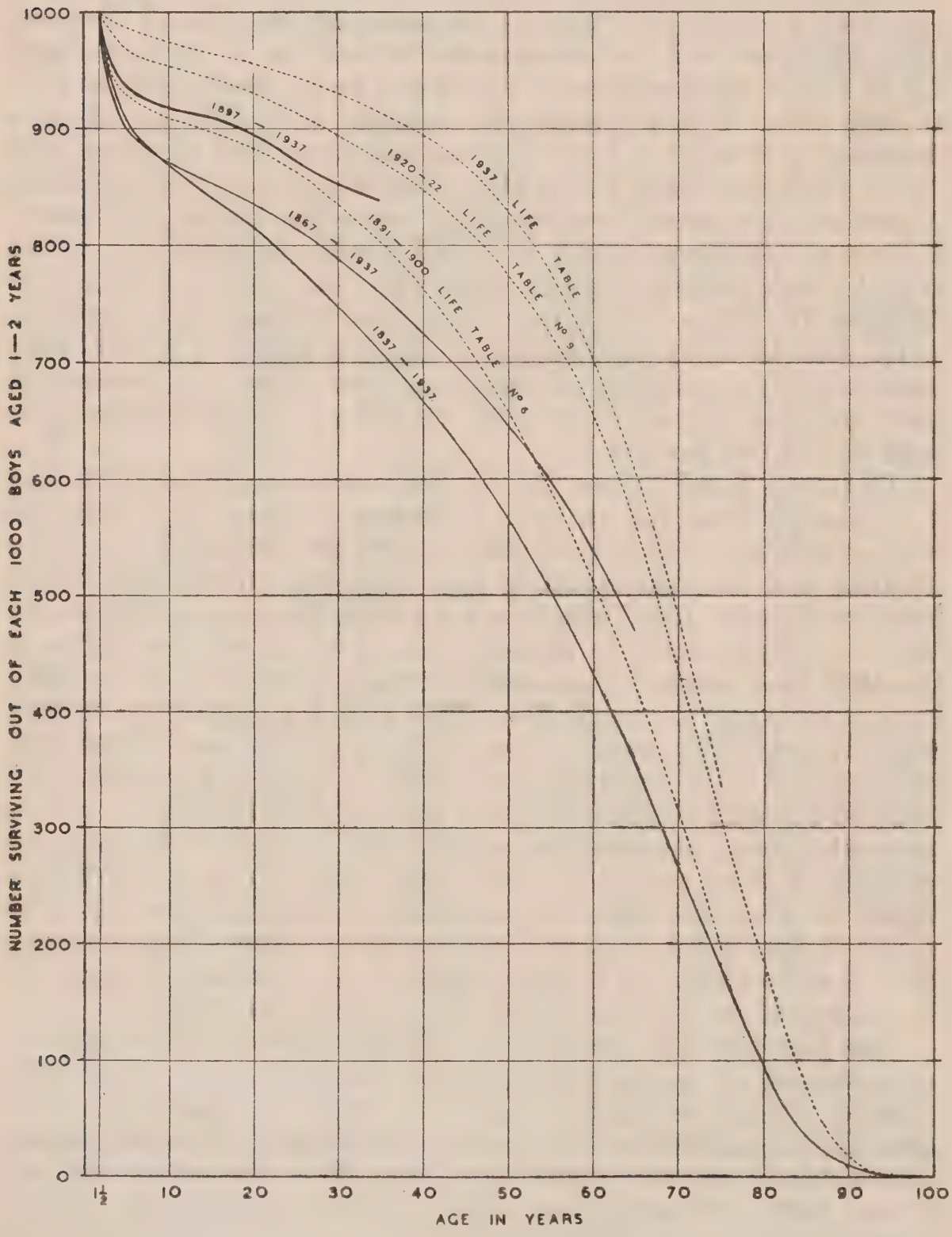
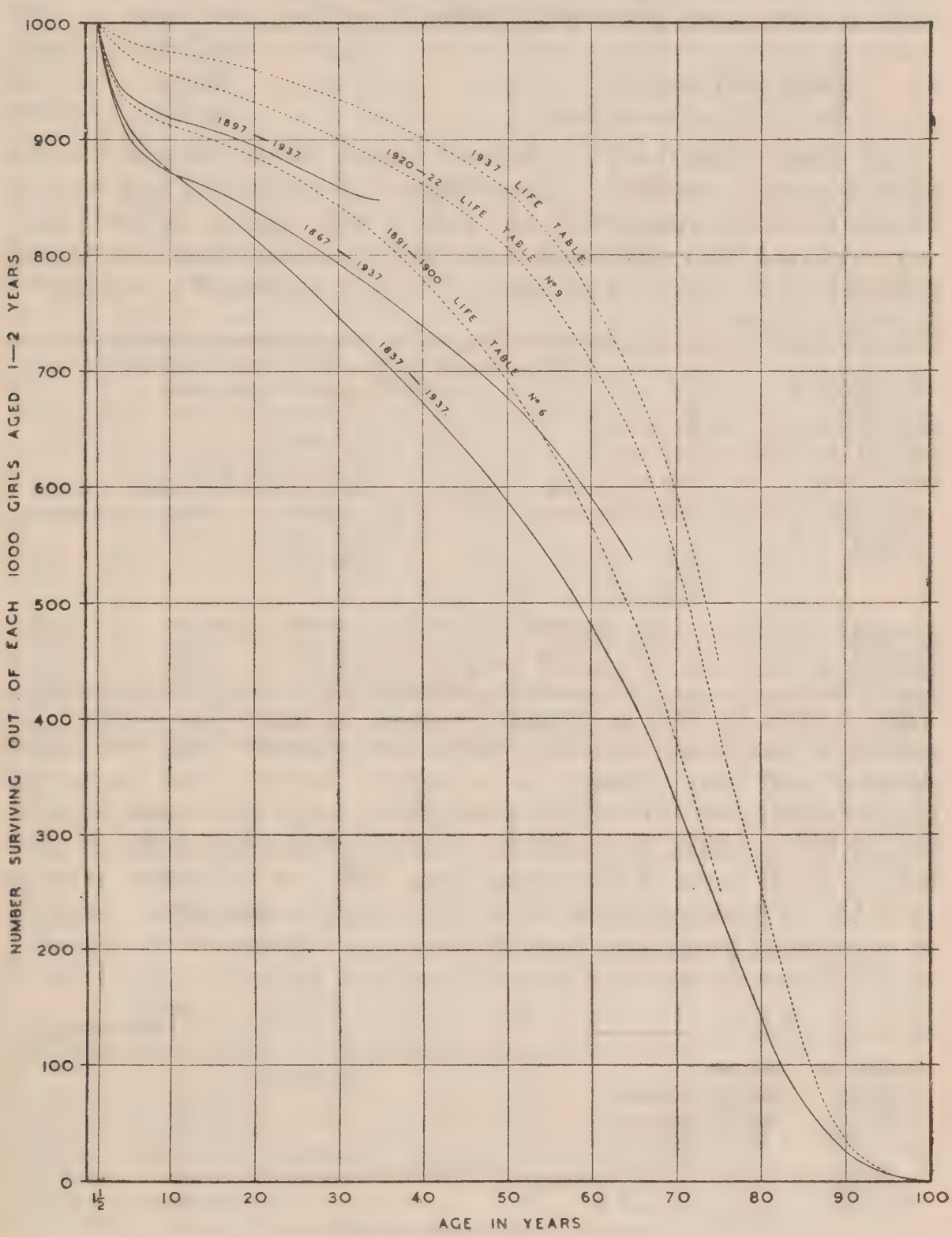


DIAGRAM 2.

SURVIVAL CURVES OF POPULATIONS OF GIRLS AGED 1–2 YEARS IN 1837, 1867 AND 1897 (CONTINUOUS LINES) AND, FOR COMPARISON, THOSE EXPECTED FROM LIFE TABLES BASED UPON THE DEATH RATES OF 1891–1900, 1920–22 AND 1937 (BROKEN LINES).



form how greatly the realised survival may differ from that envisaged by life tables.

From the First Annual Report (p. 109) it is possible to calculate the estimated crude death rates per 1,000 living for the year from mid-1837 to mid-1838 in the Metropolitan division roughly comparable with London County on the one hand and in the 5 counties which make up the present South-West Region on the other, and these are compared below with the corresponding crude rates in 1937.

	1837–38.	1937.
Metropolitan area	29·8	12·5
South-West counties	19·7	13·4

In Table G of the First Annual Report 30 districts of London were arranged according to their density of population and rates of female mortality during the last half of 1837 and in Table H they were divided into 3 groups with high, medium and low female mortality. The result may be conveniently expressed in a modified form as follows :—

Range of female death rate (annual, per 1,000 living) in latter half of 1837.	No. of districts in group.	Persons per acre in aggregate.	Mean annual death rates in latter half of 1837 per 1,000 persons living from				
			All causes.	Phthisis.	Epidemic diseases including typhus and erysipelas.	Diseases of respiratory system.	Other Causes.
17·8—21·9	10	22	21·6	3·54	5·92	5·88	6·29
22·6—27·9	10	62	28·4	4·51	9·06	7·68	7·14
28·4—39·1	10	85	33·2	4·78	13·15	8·22	7·06

This showed in 1837 a parallel increase of aggregate density per acre with increasing mortality from the epidemic and respiratory diseases and also, though to a slighter extent, with increasing phthisis mortality. In order to compile a comparable table for 1937, the 28 Metropolitan boroughs have been arranged in order of their female death rates in the census year 1931 (no estimated populations by sex being available for the Metropolitan boroughs separately in intercensal years) and then divided into 3 groups of 9, 10 and 9, and the acreage, populations and deaths of both sexes for the year 1937 aggregated for each group, with the following result.

Range of Female Death rate per 1,000 at all ages in 1931.	No. of Metropolitan Boroughs in group.	Persons per acre in aggregate.	Mean annual death rates in 1937 per 1,000 persons living from				
			All causes.	Phthisis.	Epidemic diseases*.	Diseases of respiratory system.	Other causes.
10·29–10·88	9	42	11·78	·59	·72	1·22	9·25
10·89–11·74	10	55	12·60	·75	·80	1·44	9·61
11·79–12·79	9	81	13·16	·77	·92	1·71	9·76

* Nos. 1–8, 11, 23 of Short List of Causes, approximately comparable with the group in 1837 except for exclusion of erysipelas.

Comparing this table with that for a century earlier the range of female mortality amongst the districts of London is seen to have greatly diminished, but much of this contraction of the range is attributable to transference of hospital deaths to the place of residence of the deceased, which was not done in 1837. The average density of persons per acre of the best third of the districts when ranked according to female mortality has doubled but that of the remainder has not greatly changed. The contribution to the total mortality of both sexes made by epidemic diseases, which is now relatively unimportant, still shows a density gradient and this gradient also persists for phthisis and respiratory diseases.

Although it is difficult to obtain any valid comparison between the relative frequency of most causes of death in 1837 and 1937 owing to the great changes in nomenclature and classification of diseases, it is possible to make an approximate comparison for a few causes or groups of causes such as :—smallpox; whooping cough; measles and scarlet fever; typhoid and typhus; erysipelas; respiratory and disseminated tuberculosis; pneumonia, pleurisy and congestion of the lungs; maternal mortality; violent deaths. In Table IV the deaths registered in the latter half of 1837 in England and Wales from these causes have been taken from Table A of the First Report and the deaths registered in the latter half of 1937 from the causes which are thought to be approximately comparable have been reduced in the ratio of the estimated populations (15·14 millions in 1837, 41·08 millions in 1937, ratio ·3685 to 1).

Table IV.—Deaths in England and Wales registered in July to December, 1837, from certain causes compared with corresponding deaths in the latter half of 1937 which would have occurred in the same population (without correction for changes in age distribution).

Causes in 1937 and, in brackets, corresponding groups as stated in 1837.	Deaths July–December, 1837.	Deaths July–December, 1937, in population of same size.
All causes	148,701	84,010
Smallpox	5,811	nil.
Measles, scarlet fever (measles, scarlatina)	7,252	255
Whooping cough	3,044	209
Typhus, typhoid and paratyphoid (typhus)	9,047	47
Erysipelas	482	80
Respiratory and disseminated tuberculosis (consumption, decline)	27,754	4,188
Pneumonia, pleurisy, congestion of lungs (pneumonia, pleurisy, hydrothorax) ..	7,055	4,542
Maternal mortality (childbed)	1,265	339
Violent deaths	4,845	4,206
All other causes	82,146	70,144

From this table it is evident that whereas deaths from the first six infectious disease groups fell from about 53 to 5 thousands, those from the pneumonia group declined by only 36 per cent., from violent causes by only 13 per cent. and from the residual group of causes by 15 per cent.

Deaths in 1937,

The deaths of 509,574 persons were registered in England and Wales during 1937, 260,057 of these being males and 249,517 females.

This number is 2·8 per cent. above that for 1936.

Deaths of non-civilians, which numbered only 440, are now allocated to their administrative area of residence, and are included in all 1937 tables.

Death-Rates.—The death-rates used in this Review are of several kinds. The *crude* death-rate of a given region or locality represents the number of deaths which were registered during the year as belonging to that locality, after correction for transfers to the place of residence of the deceased, per 1,000 or million of the corresponding estimated population at the middle of the year. In this rate are included deaths at all ages whatsoever. For England and Wales as a whole the crude death-rate in 1937 was 12·4 per 1,000.

Specific death-rates relate either to mortality assigned to specific causes by the processes outlined at the commencement of the section " Causes of Death " (p. 74), or else to the mortality amongst selected groups of persons specified according to their sex, age, civil condition or occupation. Specific rates of the latter type are, with certain exceptions, obtained by relating the numbers of deaths registered as being those of persons in the selected group to the estimated number of such persons alive at the mid-year. Exceptions to this are the rate of infant mortality which is based upon the number of live births registered during the year, and certain death-rates connected with childbearing which, for reasons explained in the section on maternal mortality, are based upon the number of live and still-births registered during the year.

Standardized death-rates are attempts to express the mortality of a population of changing or abnormal age distribution by a single figure calculated in such a way that the changes or abnormalities in constitution do not appreciably affect it. The standardized rates used in this Review for England and Wales as a whole, whether for all causes or specific causes, are the rates which would result if each sex and age group of the census population in 1901 was subject to the death-rate at that age during the year to which the rate applies.* On this basis of standardization the rate from all causes in 1937 was 9·3 per 1,000 living.

* For a full description of the methods employed for this " standardization " *see* The Registrar-General's Decennial Supplement—1921, Part III (pages xxxiii—xlii). Standardized death-rates for the sexes separately quoted in this Review are based upon the age distribution of persons of undistinguished sex in the general population of England and Wales in 1901.

As the population of this country in 1901 included relatively few infants and old people it forms a standard exceptionally favourable to low mortality. Its use for this purpose accordingly yields comparatively low standardized rates all round. In order to provide standardized rates for this country comparable with those of countries using the standard recommended by the International Statistical Institute (a composite population made up of those of a large number of European countries in 1900 or 1901), rates calculated upon the latter by the method suggested by the Institute* are shown in Table XXVIII, as well as those based on the 1901 English standard, which is that used elsewhere in this Review. It will be seen that use of the less favourable standard increases the rate from 9·3 to 10·4 per thousand.

Neither standard is satisfactory for the population as now constituted owing to the rapid changes in the proportionate age distribution which have occurred since 1901, but a change to some standard of more recent date would only temporarily remove this objection at the cost of grave disadvantages to the continuity of recorded death-rates. More complicated rates such as the life-table death-rate, whilst they would be free from some of the faults of the standardized rate as at present defined, suffer from the disadvantage that they postulate conditions which are hypothetical and their precise meaning is difficult to visualize.

The important effect of the rapid changes at present proceeding in the age-constitution of the population on the crude and standardized death-rates is evidenced by the fact that from 1901, when both rates were 16·9 per 1,000 persons living, the crude rate declined to 12·1 in 1921, but since then has shown no appreciable fall, the average rate in 1921–25 being 12·2, in 1926–30 12·1, in 1931–36 12·0 and in 1937 12·4. The standardized rate however, which reached 11·3 in 1921, has continued to fall, averaging 10·3 in 1926–30, 9·5 in 1931–36 and 9·3 in 1937.

Another method of expressing mortality by a single figure which is not influenced by the proportions at risk at different ages is to calculate an "equivalent average death-rate,"† that is to say an arithmetical mean of the rates at quinquennial groups of ages up to some convenient limit of age such as 65, this being equivalent to calculating a standardized death-rate at ages under 65 based upon a population equally distributed over the 13 age groups.‡ This has the effect at present of giving too great weight to mortality at the higher ages 35–65, but the extent of that overweighting is diminishing year by year, whereas the underweighting of these ages by use of the 1901 standard population becomes continually more pronounced. This is made clear by the comparison of populations

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* Annuaire International de Statistique, 1917, p. viii.

† G. W. Yule; Journal of Royal Statistical Society, 1934. xcvii, Pt. I, 15.

‡ If rates at all the quinquennial age groups are not available, twice the rate for the decennial group can be substituted without appreciable error.

in Table V, the numbers in parentheses representing the standard population of persons at ages under 65 in 1901 if it were redistributed on the basis of equal weighting used in calculating the equivalent average death-rate.

Table V.—Population of Persons in England and Wales by Ages, per 10,000 at all ages, 1901, 1911, 1921, 1931, 1936 and 1937.

	1901		1911 Census.	1921 Census.	1931 Census.	1936 Estimated.	1937 Estimated.
	Standard.	Uniform.					
0–	1,143	(733)	1,069	877	749	686	681
5–	2,099	(1,467)	1,995	1,895	1,635	1,536	1,496
15–	1,958	(1,467)	1,805	1,756	1,734	1,607	1,608
25–	1,616	(1,467)	1,651	1,520	1,605	1,667	1,662
35–	1,228	(1,467)	1,344	1,411	1,368	1,423	1,443
45–	892	(1,467)	978	1,167	1,235	1,241	1,243
55–	597	(1,467)	637	769	932	1,010	1,020
65–	331	—	377	434	536	595	607
75–	121	—	126	151	182	209	213
85 and up ..	15	—	18	20	24	26	27
All ages ..	10,000	—	10,000	10,000	10,000	10,000	10,000

The equivalent average death-rates at ages under 65 for each sex give a simple measure, unaffected by age distribution, of the mortality up to that age, but the information given by these two figures needs to be supplemented by rates at 65–75 and 75 and over in order to gain a fairly complete picture of mortality.

In Table VI the trends for each sex, since 1901, of (*a*) the crude death-rate, (*b*) the standardized death-rate, (*c*) the equivalent average death-rate under 65, and (*d*) the life-table death-rate (1,000 divided by the complete expectation of life at birth) are compared. The proportionate fall in the equivalent average death-rate under 65 has been only slightly greater than that of the standardized rate at all ages, notwithstanding that the improvement at the excluded ages over 65 has been very much less than at the earlier ages. Their simple definition and ready calculation, and the fact that they are not dependent upon an arbitrary standard population out of relation to present-day conditions, give these equivalent rates certain advantages over the standardized rates for separate causes, and these alternative rates have been given in several tables of this Review.

For most causes of death the standardized rates in Table 8 were below the average for the preceding five years, the comparison on this basis being specially favourable for measles, whooping cough, scarlet fever, erysipelas, cerebro-spinal fever, tuberculosis, syphilis, rheumatic fever, pernicious anaemia, bronchitis, undefined pneu-

monia, valvular disease of the heart, fatty heart, ill defined diseases of the heart and stomach, gangrene, hernia, intestinal obstruction, biliary calculi, cirrhosis of the liver, nephritis and suicide in both sexes, for cancer, lobar pneumonia, pleurisy, congestion of the lung, gastric ulcer and peritonitis in females and for tabes dorsalis and general paralysis in males. The causes which showed appreciable increases over the preceding five-year average were influenza, diabetes, leukæmia, myocarditis, cardiovascular degeneration and angina pectoris in both sexes and cancer, diseases of veins and broncho-pneumonia in males.

Table VI.—Trend of Crude and Corrected Death-Rates since 1901 by Sex ; Rates per 1,000 living and per cent. of the rate in 1911.

	Crude death-rate, all ages.		Standardized death-rate, all ages.		Equivalent average rate under 65.		Life table death-rate, all ages.	
	M.	F.	M.	F.	M.	F.	M.	F.
	Rates per 1,000 living.							
1901	18·1	15·8	18·5	15·5	16·2	13·2	—	—
1911	15·6	13·7	15·6	13·0	13·6	11·0	19·4	18·1
1921	13·0	11·3	12·5	10·2	10·5	8·5	18·0	16·8
1931	13·0	11·6	11·3	9·0	9·3	7·2	17·0	15·9
1932	12·7	11·4	10·9	8·7	8·9	6·9	—	—
1933	12·9	11·7	10·9	8·8	9·1	7·0	—	—
1934	12·5	11·1	10·4	8·3	8·8	6·7	—	—
1935	12·5	11.1	10·2	8·0	8·5	6·4	—	—
1936	12·9	11·4	10·4	8·2	8·7	6·4	—	—
1937	13·2	11·7	10·5	8·2	8·8	6·5	16·5*	15·5*
	Per cent. of rate in 1911.							
1901	116	115	119	119	119	120	—	—
1911	100	100	100	100	100	100	100	100
1921	83	82	80	78	77	77	92	93
1931	83	85	72	69	68	65	87	88
1934	80	81	67	64	65	61	—	—
1935	80	81	65	62	63	58	—	—
1936	83	83	67	63	64	58	—	—
1937	85	85	67	63	65	59	85*	86*

* Estimates from abridged life table based on 1937 death rates.

Adjusted Death-Rates for Local Areas. — In the Review for 1934 the methods employed prior to the year 1911 to correct

local death rates for peculiarities in the sex and age constitutions of their populations were summarized.

In the Report for 1911 the indirect method of standardization was employed for every administrative area, a standardizing factor being calculated by applying the mean death rates in England and Wales during 1901–10 for each sex at separate ages to the local population as constituted in 1911 on the one hand and to the standard population of England and Wales in 1901 on the other. These factors, by which the crude death-rates were to be multiplied, were employed throughout the ensuing decade until they were recalculated by applying the mean national death rates in 1920–22 to the local census population in 1921 and the standard population of England and Wales in 1901. The 1921 series was not published in the annual Reports but the appropriate factor was furnished to each local Medical Officer of Health.

The disadvantages of continuing to relate the death-rates of local areas to a standard population so different in age constitution from the present population of England and Wales are plain from the fact that a corresponding standardizing factor for England and Wales as a whole for the year 1931 calculated by applying 1930–32 rates would be ·82, compared with unity in 1901 and ·98 in 1911. In consequence, neither the standardizing factor nor the resulting standardized death-rate for a local area calculated on the 1901 standard now conveys any information in itself, without first comparing it with the corresponding factor or rate for the country as a whole.

What is needed is a simple ratio which immediately conveys to the mind, without further calculations, the extent to which a local death-rate in the present year is in excess or defect of the rate expected, after taking into account (1) the sex and age constitution of its population as determined at the most recent census and (2) the mortality in the country as a whole during the present year. Whether the ratio be calculated by the direct or indirect method of standardization is of no practical importance provided that the standard rates used for the latter are those of a recent period of years.

This need has been met since 1934 by the calculation for every separate administrative area, county aggregate, county and region, as shown in Table 17, of an *areal comparability factor*, A.C.F. and a *ratio of adjusted death-rate to national rate* or *standardized ratio*.

The method of calculation is as follows :—Standard national death rates for the triennium 1930–32 at various sex and age groups are obtained by dividing the deaths registered in England and Wales in the three years by three times the census population. The standard rates are multiplied by the corresponding groups of the census population in 1931 of the area (as now defined). The groups employed may be conveniently reduced to 11 without seriously

affecting the accuracy of the resulting factor, viz. persons under 5, persons aged 5–34, males aged 35–54, 55–64, 65–74, 75–84, females of the same ages, and persons aged 85 and over. In certain areas where the population at 5–34 is known to be abnormally distributed owing to the presence of large schools or institutions for young people this age group is further subdivided. The sum of the resulting products divided by the total population gives the expected mean local death-rate at all ages in 1930–32. The ratio of the mean crude death-rate of England and Wales in 1930–32 to this local index rate is the "areal comparability factor," or "A.C.F." for the area as given in Column 13 of Table 17.

The "A.C.F." for 1937 relates to the population of the area as defined by boundaries during that year, but it is of course based upon the sex and age constitution of that area as it was determined at the last census of 1931. Provided that there have not been in the meantime changes in boundary or selective movements of population at certain ages important enough to change the age distribution of the population included, in a different way to that of the country as a whole, the areal comparability factor remains the same from year to year, and except where influenced by such changes in the future it will remain applicable until a new series of factors can be calculated on the basis of the next census.

The adjusted death rate for 1937 is obtained by multiplying the local crude death rate by the A.C.F. for that year, and the standardized ratio given in column 14 of Table 17 is the ratio of this adjusted death rate to the crude death rate of England and Wales in 1937. Adjusted local D.R. = A.C.F. × crude D.R.

If it is desired to calculate *standardized death rates* based on 1901 standard population and comparable with those given for separate areas in the Annual Report for 1911, the adjusted death rate must be further multiplied by the time comparability factor (T.C.F.) or ratio of the standardized national rate (persons) to the crude national rate (persons) for the year in question. Standardized local D.R. = T.C.F. × A.C.F. × crude local D.R. The numerical values of the T.C.F. for the years 1931 to 1937 are:—1931, ·820; 1932, ·808; 1933, ·796; 1934, ·790; 1935, ·768; 1936, ·759; 1937, ·746.

The assumption here involved is that the distribution by sex and age of the local population has undergone since the 1931 Census the same proportionate changes as has the distribution of the national population (the age changes in the national population between census years having been calculated annually since 1915 by adding births and deducting the deaths at various ages). Although this assumption is not necessarily true in the case of certain rapidly growing areas, it is the best approximation which can be made and is more satisfactory than the assumption hitherto made in local standardization for inter-censal years, namely that

the local sex and age distribution remained unchanged until it was again ascertained by the next census.*

The areal comparability factors in Table 17 can only be applied to mortality from all causes, although for causes of death whose incidence according to sex and age is similar to that for all causes combined the appropriate factor would be found to be very similar. For most causes, however, the specific factor, which can be calculated in the same manner by substituting death-rates from the specific cause in 1930–32 for the death-rates from all causes, differs from the factor tabulated. This is shown below by a few examples which were calculated for the county boroughs of Bournemouth and St. Helens in 1934.

	Areal comparability factors, 1934, for—					
	All causes.	Cancer.	Measles.	Diabetes.	Heart disease.	Respiratory tuberculosis.
Bournemouth ..	0·75	0·70	1·39	0·68	0·65	1·01
St. Helens ..	1·23	1·32	0·80	1·34	1·46	0·97

Whilst the cancer, diabetes and heart disease factors tend to resemble the factors for all causes, those for measles and phthisis are widely different.

The effect of standardization of the death rates of the county boroughs upon the amount of variation met with in these rates has been demonstrated in previous Reviews, where it has been shown that correction for differences in age distribution accentuates the contrasts between the mortalities of the northern industrial towns and the residential and agricultural towns instead of diminishing them. In 1937 the ratio of the crude death rate to the national rate ranged for the county boroughs from 0·83 for Oxford to 1·35 for Hastings, whilst the standardized ratio ranged from 0·80 for Oxford to 1·44 for Oldham. This is no new phenomenon, for in 1911, whereas the ratio of the crude death-rate to the national rate ranged from 0·72 (Eastbourne) to 1·38 (Liverpool and Middlesbrough), the ratio for standardized rates had a wider range from 0·75 (Eastbourne) to 1·50 (Middlesbrough).

Table VII gives the standardized death rates for London, all county boroughs, other urban areas and all rural districts in each year 1911–1914, this rate being calculated by the direct method of standardization. For comparison with these are given the S.D.R.'s. for London Administrative County, all county boroughs, other

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* No such correction for the changing age distribution from year to year was applied in the calculation of the standardized death rates for separate areas given in the Annual Reports for 1912, 1913 and 1914, the assumption being that the T.C.F. remained the same as in the last census year 1911. The national S.D.R. was, of course, corrected year by year for estimated changes in the age distribution. At that time, however, these changes were slow and the effect of this correction upon the 1912–1914 local rates is found to be slight; it reduces the average standardized rates for the 4 year period 1911–1914 by about 0·6 per cent. of the rates. Wherever standardized death rates of separate areas are given in this Review the necessary correction has been applied, no matter to what year or years they refer.

urban districts and all rural districts outside Greater London in 1931–37, these rates being calculated by multiplying the crude death rate in Table 17 by the A.C.F. given in column 13 of the same table and by the T.C.F. for the year in question as given in the prefatory notes to the table. The exclusion of Greater London from the aggregates does not seriously affect the comparison with 1911–14, the S.D.R. for county boroughs being raised by 1 per cent. and that for other urban districts by 3 per cent. whilst the rural district rate is unaffected. At the foot of the table the S.D.R.'s have been introduced in the form of standardized (percentage) mortality ratios.

Table VII.—Standardized Mortality at all ages in London, Urban and Rural Aggregates, and percentage excess in the County Boroughs compared with Rural districts, 1911–14 and 1931–37.

	England and Wales.	London Administrative County.	Aggregate of county boroughs.*	Aggregate of other urban districts.*	Aggregate of rural districts.*	Per cent. excess in county boroughs over rural districts.
	Standardized Death Rates per 1,000 persons.					
1911 ..	14·2	15·3	16·6	14·0	11·4	+46
1912 ..	12·9	13·8	15·2	12·4	10·5	+45
1913 ..	13·3	14·3	15·6	12·8	10·7	+46
1914 ..	13·5	14·6	16·1	12·9	10·8	+49
Average 1911–14	*13·5*	*14·5*	*15·9*	*13·0*	*10·9*	*+46*
1931 ..	10·1	10·4	11·4	10·1	8·9	+28
1932 ..	9·7	10·1	10·7	9·7	8·7	+23
1933 ..	9·8	10·2	11·1	9·8	8·7	+28
1934 ..	9·3	9·8	10·3	9·2	8·4	+23
Average 1931–34	*9·7*	*10·1*	*10·9*	*9·7*	*8·7*	*+25*
1935 ..	9·0	8·9	10·2	9·1	8·2	+24
1936 ..	9·2	9·5	10·3	9·2	8·3	+24
1937 ..	9·3	9·5	10·4	9·3	8·2	+27
	Standardized (percentage) Mortality Ratios.†					
1911–14 ..	100	107	118	96	81	—
1931–34 ..	100	104	112	100	90	—
1935 ..	100	99	113	101	91	—
1936 ..	100	103	112	100	90	—
1937 ..	100	102	112	100	88	—

* Outside Greater London from 1931 onwards.

† Percentage ratio of local adjusted to national crude death rate (1931–37) or percentage ratio of local standardized to national standardized death rate (1911–14).

The average excess of county borough over rural mortality, after allowance has thus been made for the greater average age of rural populations, was 46 per cent. in the period 1911–14. Twenty years later, in 1931–34, the average standardized death rate of the county boroughs had fallen from 15·9 to 10·9 or by 31 per cent., that of other urban areas from 13·0 to 9·7 or by 25 per cent., and that of rural districts from 10·9 to 8·7 or by 20 per cent., the excess of county borough over rural mortality being thus reduced to 25 per cent. In 1935 and 1936 the county borough excess was 24 and in 1937 it was 27 per cent. The excess of London over rural mortality fell from 33 per cent. in 1911–14 to 16 per cent. in 1931–34; it was 9 in 1935, 14 in 1936 and 16 per cent. in 1937. For the small towns the excess over rural mortality declined from 19 per cent. in 1911–14 to 12 per cent. in 1931–34 and was 13 per cent. in 1937. From these figures, it is apparent that owing to the more rapid reduction in urban than rural mortality the handicap imposed by urban residence is now little more than half as great as it was a quarter of a century ago.

The changes which took place in the standardized death rates of each separate county borough between 1911–14 and 1931–34 were dealt with in the section on " Standardized Mortality of the County Boroughs and Administrative Counties in 1931–34 compared with 1911–14," in the Review for 1934 (pp. 144–150).

Statistical Significance of Death Rates.—Whilst it is most desirable that conclusions should not be drawn from differences between death rates without inquiring first whether the differences have any statistical significance when account is taken of the numbers of deaths on which the rates are based, it is scarcely practicable to introduce into the many tables of death rates in the Annual Review any statistical measure of their significance. In Part I of this Review, however, all death rates based upon less than 20 deaths have been distinguished by *italic* type in order to convey a warning that such rates are subject to a specially large amount of variation in proportion to their magnitude owing to the small number of persons whose experience is being recorded, and in such cases a test of statistical significance should always be applied before making even a tentative deduction from rate differences. The necessity for such a test still holds for rates based upon numbers of deaths exceeding 20, but the likelihood that a given deviation from some expected value has arisen merely by chance diminishes as the size of the experience increases. In the Text of this Review an approximate test of significance has been applied to death rates wherever it has been deemed to be important.

Provided that the deaths are few in comparison with the population at risk (as is usually the case except at ages over 75) an approximate measure of the variability, or standard error, of the number of deaths is given by the square root of that number. This rule presupposes the independence of the deaths one of another and would

cease to be accurate if a large proportion of the recorded deaths was due to some factor, for instance, an explosion or an epidemic, affecting simultaneously a large number of persons in the population under consideration. This is rarely of importance in connection with death rates from all causes combined. For practical application it is generally more convenient to deduce the standard error from the actual deaths rather than from "expected" deaths based on some standard mortality, although in some circumstances the latter may have theoretical advantages as a basis for calculating the standard error. If the recorded deaths in a population group happen to be zero it is necessary if a standard error is required to calculate it from the square root of the deaths expected by applying some standard rate to the population. When comparison is being made with a standard rate, such as the national death rate or the mortality in all county boroughs, it may also be convenient in some cases to substitute the square root of the deaths expected if the standard rate were operative on the local population. It is not of much practical importance which of these measures of variability is used and the method which is most readily applicable by means of the data tabulated and which seems most suitable to the comparison required will be employed. What is of more importance is to remember that little or no useful purpose can be served by measuring the standard errors of crude death rates which are affected by differences in sex and age constitution of the populations. Before any test of the statistical significance of a difference between two rates can be usefully applied both rates must first be corrected to a common standard to remove the effects of peculiarities in the constitution of the population at risk.

The extent to which the number of deaths which happen to occur in populations of the same size and constitution in the same year may vary on account of random sampling, and the decrease in the proportionate amount of such variability as the size of the experience increases, may be seen from the following values of the standard error, expressed as a percentage of the number of deaths in each instance :—

No. of deaths ..	10	20	50	100	200	500	1,000
Standard error as percentage of No. of deaths ..	±32	±22	±14	±10	±7	±4	±3

A positive deviation from the average number of deaths amounting to as much as twice the standard error may occur about once in 44 times and the odds against such a deviation being due to chance would be about 43 to 1.* These would likewise be the odds against a negative deviation amounting to twice the standard error

* A positive deviation not less than the standard error may be expected about once in 6 times, and a positive deviation not less than $1\frac{1}{2}$ times the standard error about once in 15 times.

being due to chance. Taking this as a reasonable arbitrary limit of unlikelihood no deviation will be regarded as statistically significant unless it equals or exceeds twice the square root of the number of deaths. Thus, a number of towns, each of such a size as to produce on the average 50 annual deaths, may have in the same year numbers of deaths ranging from 36 to 64 without the differences having any hygienic significance (15 being a just significant variation from 50 according to the definition).

The application of this convention to determine the significance of differences between infant mortality rates or other *rates not requiring correction for age constitution* is a simple matter. The standard error of the rate R (per unit) is given by the ratio of the square root of the deaths D to the population at risk P, and since in this case $P=D/R$, the standard error of R can be expressed as $R/\sqrt{D}$ and obtained by simply dividing the rate by the square root of the number of deaths. This last expression is equally applicable whether R is measured per unit, per cent. or per 1,000 population or births. Thus, for a town with an infant mortality rate of 69 per 1,000 births based on 25 deaths, the rate of 69 has a standard error of the order 69/5 or about 14.

The same simple rule applies also to the ratios of registered to standard deaths or of adjusted to national death rates given in column 14 of Table 17, the standard errors of these (or of similarly calculated adjusted or standardized mortality rates) being most easily obtained by dividing the ratio or rate by the square root of the number of recorded deaths on which it is based. Thus, Table 17, page 75, shows that Wirral Urban District in Cheshire recorded in 1937, 144 deaths, giving an adjusted death rate ·97 times the national rate. The standard error of the mortality ratio was therefore ·97/12 or ·081 and, since deviations less than twice the standard error are to be disregarded, variations from year to year within the limits $\cdot 97 \pm \cdot 16$, that is, between ·81 and 1·13 have no statistical significance.*

The difference between two death rates can only be regarded as significant if it amounts to twice the standard error of that difference, that is, to twice the square root of the sum of the squares of the standard errors of the death rates.

In Table VIII, columns 2, 6 and 10 give the differences between the standardized mortality ratio or infantile mortality rate of each

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* If it is desired to compare an *adjusted death rate* with the national death rate and if it is thought preferable to use the deaths expected if the national mortality was operative as basis for the standard error, the alternative calculation is as follows. If S is the standard rate per 1,000, P the local population and C the local comparability factor (column 13 of Table 17), the " expected " deaths on the basis of the standard rate are given approximately by SP/1,000C and the standard error of A (the local adjusted rate per 1,000) is measured by dividing the square root of this number by P and multiplying by 1,000 giving $\sqrt{1{,}000\ S/PC}$. If A differs from S by less than twice the resulting figure it is not significantly different from it.

town and that of the *group* in which it is classed. Columns 3, 7 and 11 give the standard errors of these figures as measured by the mortality ratio or rate divided by the square root of the number of deaths on which it is based.

If the difference amounts to two or more times the standard error of that difference, as given by the formula above, the word " high "

Table VIII.—Standardized Mortality at All Ages in 1936 and 1937 and Infant Mortality in 1937, in the Great Towns* grouped according to their population, separating those of Greater London.

Town.	Regional Letter.	1936				1937							
		Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Infant Mortality Rate (per 1,000 live births).	Difference from rate for group.	Standard error of I.M.R.	Significantly above or below I.M.R. of group.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) *London Ad. County* ..	S E	104				103				60			
Battersea ..		107	+ 3	2·5		103	0	2·4		70	+10	5·7	
Bermondsey..		121	+17	3·4	High	113	+10	3·2	High	59	− 1	6·4	
Bethnal Green		119	+15	3·4	High	115	+12	3·3	High	54	− 6	6·5	
Camberwell ..		104	0	1·9		103	0	1·9		58	− 2	4·3	
Chelsea ..		96	− 8	3·4	Low	97	− 6	3·4		59	− 1	9·8	
Deptford ..		105	+ 1	3·0		99	− 4	2·9		45	−15	5·5	Low
Finsbury ..		126	+22	4·3	High	128	+25	4·4	High	71	+11	9·3	
Fulham ..		105	+ 1	2·5		107	+ 4	2·5		56	− 4	5·4	
Greenwich ..		96	− 8	2·9	Low	99	− 4	2·9		50	−10	6·1	
Hackney ..		104	0	2·1		95	− 8	2·0	Low	43	−17	3·9	Low
Hammersmith		106	+ 2	2·7		105	+ 2	2·6		68	+ 8	6·0	
Hampstead ..		88	−16	2·7	Low	89	−14	2·7	Low	54	− 6	7·3	
Holborn ..		106	+ 2	5·2		102	− 1	5·0		79	+19	16·8	
Islington ..		105	+ 1	1·7		107	+ 4	1·7	High	67	+ 7	3·9	
Kensington ..		97	− 7	2·1	Low	102	+ 1	2·1		83	+23	6·2	High
Lambeth ..		102	− 2	1·7		105	+ 2	1·7		69	+ 9	4·2	High
Lewisham ..		91	−13	1·8	Low	89	−14	1·8	Low	47	−13	4·0	Low
Paddington..		105	+ 1	2·5		105	+ 2	2·5		66	+ 6	5·9	
Poplar ..		115	+11	2·8	High	113	+10	2·7	High	61	+ 1	5·4	
St. Marylebone		104	0	3·0		104	+ 1	3·0		73	+13	9·2	
St. Pancras ..		110	+ 6	2·2	High	105	+ 2	2·2		65	+ 5	5·2	
Shoreditch ..		116	+12	3·5	High	111	+ 8	3·5	High	54	− 6	6·6	
Southwark ..		116	+12	2·6	High	122	+19	2·7	High	65	+ 5	5·5	
Stepney ..		122	+18	2·4	High	115	+12	2·3	High	60	0	4·7	
Stoke Newington		90	−14	3·8	Low	98	− 5	3·9		37	−23	7·0	Low
Wandsworth		91	−13	1·4	Low	93	−10	1·4	Low	64	+ 4	4·0	
Westminster		100	− 4	2·6		96	− 7	2·5	Low	56	− 4	7·4	
Woolwich ..		99	− 5	2·4	Low	95	− 8	2·3	Low	40	−20	4·3	Low
(2) *Towns in London's Outer Ring with 100,000 or more population in 1931*	S E	92				93				55			
Croydon C.B.		85	− 7	1·7	Low	90	− 3	1·7		60	+ 5	4·3	
Ealing ..		83	− 9	2·2	Low	78	−15	2·0	Low	46	− 9	4·5	Low
East Ham C.B.		97	+ 5	2·6		96	+ 3	2·5		49	− 6	5·0	
Hendon ..		81	−11	2·4	Low	86	− 7	2·4	Low	45	−10	5·0	Low
Ilford ..		75	−17	2·1	Low	79	−14	2·1	Low	42	−13	4·3	Low
Leyton ..		85	− 7	2·4	Low	89	− 4	2·4		53	− 2	6·1	
Tottenham ..		101	+ 9	2·5	High	101	+ 8	2·5	High	64	+ 9	5·7	
Walthamstow		91	− 1	2·5		98	+ 5	2·6		52	− 3	5·6	
West Ham C.B.		110	+18	2·0	High	111	+18	2·0	High	62	+ 7	3·9	
Willesden ..		98	+ 6	2·2	High	94	+ 1	2·1		64	+ 9	4·5	High

* Comprising the 125 Great Towns as shown in the Registrar General's Weekly and Quarterly Returns, with further distinction of each of the Metropolitan Boroughs in London Administrative County.

Table VIII.—*contd.*

Town.	Regional Letter.	1936				1937							
		Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Infant Mortality Rate (per 1,000 live births).	Difference from rate for group.	Standard error of I.M.R.	Significantly above or below I.M.R. of group.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(3) Towns in London's Outer Ring with 50,000 but less than 100,000 population in 1931	S E	84				82				45			
Acton ..		104	+20	3·7	High	95	+13	3·5	High	58	+13	8·1	
Barking ..		82	− 2	3·3		79	− 3	3·2		54	+ 9	6·9	
Beckenham		75	− 9	3·0	Low	70	−12	2·8	Low	35	−10	6·1	
Brentford and Chiswick		101	+17	3·7	High	95	+13	3·6	High	52	+ 7	8·2	
Dagenham ..		81	− 3	3·2		77	− 5	3·0		53	+ 8	5·2	
Edmonton ..		80	− 4	2·7		84	+ 2	2·7		51	+ 6	5·7	
Enfield ..		83	− 1	2·9		86	+ 4	2·8		44	− 1	5·4	
Finchley ..		83	− 1	3·3		86	+ 4	3·2		40	− 5	6·7	
Harrow ..		74	−10	2·1	Low	73	− 9	2·0	Low	36	− 9	3·4	Low
Heston and Isleworth		79	− 5	2·7		76	− 6	2·5	Low	40	− 5	5·2	
Hornsey ..		90	+ 6	2·7	High	87	+ 5	2·6		45	0	6·2	
Mitcham ..		92	+ 8	3·8	High	84	+ 2	3·5		43	− 2	6·7	
Southgate ..		80	− 4	3·2		85	+ 3	3·2		43	− 2	8·1	
Twickenham		91	+ 7	2·9	High	84	+ 2	2·8		33	−12	5·1	Low
Wembley ..		75	− 9	2·7	Low	74	− 8	2·6	Low	44	− 1	4·9	
Wimbledon ..		86	+ 2	3·3		94	+12	3·4	High	67	+22	10·5	High
Wood Green		92	+ 8	3·8	High	90	+ 8	3·7	High	49	+ 4	8·7	
(4a) County Boroughs outside Greater London with 250,000 or more population in 1931	—	112				113				69			
Birmingham	M1	105	− 7	1·0	Low	106	− 7	1·0	Low	60	− 9	1·9	Low
Bradford ..	N3	123	+11	1·9	High	119	+ 6	1·8	High	70	+ 1	4·2	
Bristol ..	M1	98	−14	1·4	Low	92	−21	1·3	Low	46	−23	2·8	Low
Kingston-upon-Hull	N2	115	+ 3	1·8		112	− 1	1·8		77	+ 8	3·6	High
Leeds ..	N3	120	+ 8	1·5	High	116	+ 3	1·4	High	67	− 2	3·0	
Leicester ..	M2	98	−14	1·8	Low	103	−10	1·8	Low	63	− 6	4·1	
Liverpool ..	N4	125	+13	1·2	High	127	+14	1·2	High	82	+13	2·2	High
Manchester ..	N4	129	+17	1·3	High	128	+15	1·3	High	76	+ 7	2·6	High
Newcastle-on-Tyne ..	N1	123	+11	2·0	High	122	+ 9	2·0	High	91	+22	4·4	High
Nottingham	M2	112	0	1·8		111	− 2	1·8		80	+11	4·2	High
Portsmouth ..	S E	97	−15	1·8	Low	92	−21	1·7	Low	44	−25	3·4	Low
Sheffield ..	N3	114	+ 2	1·4		114	+ 1	1·4		55	−14	2·6	Low
Stoke-upon-Trent ..	M1	125	+13	2·1	High	129	+16	2·2	High	81	+12	4·2	High
(4b) County Boroughs outside Greater London with 100,000 but less than 250,000 population in 1931	—	113				115				66			
Birkenhead ..	N4	114	+ 1	2·6		114	− 1	3·6		78	+12	5·7	High
Blackburn ..	N4	123	+10	3·0	High	128	+13	3·1	High	69	+ 3	7·2	
Blackpool ..	N4	115	+ 2	2·7		122	+ 7	2·7	High	60	− 6	6·9	
Bolton ..	N4	122	+ 9	2·5	High	125	+10	2·5	High	62	− 4	5·4	
Bournemouth	S E	86	−27	2·1	Low	88	−27	2·1	Low	46	−20	5·8	Low
Brighton ..	S E	102	−11	2·2	Low	91	−24	2·0	Low	52	−14	5·2	Low
Coventry ..	M1	101	−12	2·3	Low	103	−12	2·2	Low	50	−16	4·0	Low
Derby ..	M2	103	−10	2·5	Low	108	− 7	2·5	Low	63	− 3	5·5	
Gateshead ..	N1	124	+11	3·1	High	125	+10	3·1	High	77	+11	6·1	

Table VIII.—*contd.*

Town.	Regional Letter.	1936				1937							
		Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Infant Mortality Rate (per 1,000 live births).	Difference from rate for group.	Standard error of I.M.R.	Significantly above or below I.M.R. of group.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(4b)—*contd.*													
Huddersfield	N3	120	+ 7	3·0	High	120	+ 5	2·9		61	− 5	6·3	
Middlesbrough	N2	119	+ 6	2·9	High	131	+16	3·0	High	91	+25	5·8	High
Norwich ..	E	91	−22	2·4	Low	86	−29	2·3	Low	52	−14	5·5	Low
Oldham ..	N4	138	+25	3·1	High	144	+29	3·2	Hgh	69	+ 3	6·4	
Plymouth ..	SW	103	−10	2·0	Low	104	−11	2·0	Low	46	−20	3·9	Low
Preston ..	N4	129	+16	3·2	High	127	+12	3·2	High	77	+11	6·9	
*Rhondda U.D.	W1	133	+20	3·2	High	134	+19	3·2	High	67	+ 1	6·1	
St. Helens ..	N4	123	+10	3·4	High	120	+ 5	3·3		88	+22	6·7	High
Salford ..	N4	137	+24	2·5	High	139	+24	2·6	High	84	+18	5·2	High
Southampton	S E	99	−14	2·1	Low	99	−16	2·1	Low	49	−17	4·2	Low
Southend-on-Sea ..	S E	88	−25	2·2	Low	98	−17	2·3	Low	46	−20	5·4	Low
South Shields	N1	122	+ 9	3·2	High	121	+ 6	3·1		80	+14	6·6	High
Stockport ..	N4	115	+ 2	2·8		118	+ 3	2·7		57	− 9	5·5	
Sunderland ..	N1	118	+ 5	2·4	High	126	+11	2·5	High	85	+19	4·8	High
Walsall ..	M1	110	− 3	3·1		108	− 7	3·0	Low	57	− 9	5·5	
Wolverhampton ..	M1	99	−14	2·5	Low	104	−11	2·5	Low	68	+ 2	5·3	
Cardiff ..	W1	110	− 3	2·1		109	− 6	2·1	Low	65	− 1	4·4	
Swansea ..	W1	115	+ 2	2·5		116	+ 1	2·6		56	−10	4·8	Low
(4c) *County Boroughs outside Greater London with 50,000 but less than 100,000 population in 1931*	—	110				109				59			
Barnsley ..	N3	118	+ 8	4·0	High	121	+12	4·0	High	57	− 2	7·0	
Barrow-in-Furness ..	N4	114	+ 4	4·0		124	+15	4·1	High	72	+13	8·5	
Bath.. ..	S W	92	−18	2·9	Low	91	−18	2·8	Low	40	−19	7·1	Low
Bootle ..	N4	133	+23	4·1	High	121	+12	3·9	High	77	+18	6·8	High
Burnley ..	N4	126	+16	3·5	High	135	+26	3·6	High	75	+16	8·4	
Bury ..	N4	114	+ 4	4·0		126	+17	4·1	High	57	− 2	8·7	
Carlisle ..	N2	113	+ 3	4·0		110	+ 1	3·9		53	− 6	7·5	
Darlington ..	N1	111	+ 1	3·6		109	0	3·5		59	0	7·2	
Dewsbury ..	N3	132	+22	4·6	High	123	+14	4·4	High	62	+ 3	8·8	
Doncaster ..	N3	102	− 8	3·6	Low	101	− 8	3·5	Low	61	+ 2	7·6	
Dudley ..	M1	109	− 1	4·1		114	+ 5	4·2		80	+21	8·3	High
Eastbourne ..	S E	87	−23	3·2	Low	91	−18	3·2	Low	31	−28	7·1	Low
Exeter ..	S W	93	−17	3·1	Low	90	−19	3·0	Low	56	− 3	7·6	
Gloucester ..	M1	98	−12	3·6	Low	99	−10	3·6	Low	49	−10	7·2	
Gt. Yarmouth	E	93	−17	3·5	Low	99	−10	3·6	Low	39	−20	7·2	Low
Grimsby ..	E	103	− 7	3·1	Low	99	−10	3·0	Low	57	− 2	6·1	
Halifax ..	N3	124	+14	3·2	High	115	+ 6	3·0	High	64	+ 5	7·2	
Hastings ..	S E	91	−19	2·8	Low	91	−18	2·8	Low	48	−11	8·2	
Ipswich ..	E	94	−16	2·8	Low	82	−27	2·6	Low	32	−27	4·8	Low
Lincoln ..	E	103	− 7	3·6		109	0	3·7		69	+10	9·1	
Northampton	M2	97	−13	2·8	Low	99	−10	2·8	Low	49	−10	6·4	
Oxford ..	S E	81	−29	2·7	Low	80	−29	2·6	Low	36	−23	5·1	Low
Reading ..	S E	94	−16	2·6	Low	93	−16	2·6	Low	52	− 7	5·8	
Rochdale ..	N4	131	+21	3·5	High	130	+21	3·5	High	53	− 6	7·0	
Rotherham	N3	113	+ 3	3·8		106	− 3	3·6		49	−10	6·2	
Smethwick ..	M1	100	−10	3·4	Low	107	− 2	3·5		52	− 7	6·6	
Southport ..	N4	103	− 7	3·0	Low	107	− 2	3·0		67	+ 8	9·0	
Tynemouth..	N1	107	− 3	3·8		115	+ 6	3·9		65	+ 6	7·7	
Wakefield ..	N3	120	+10	4·2	High	101	− 8	3·9	Low	55	− 4	8·2	
Wallasey ..	N4	106	− 4	3·0		106	− 3	3·0		59	0	6·8	

* Included for convenience in this group as the only town outside Greater London other than a County Borough with 1931 population over 100,000.

Table VIII.—*contd.*

Town.	Regional Letter.	1936				1937							
		Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Standardized Mortality figure (all ages).	Difference from Mortality figure for group.	Standard error of S.M.R.	Significantly above or below S.M.R. of group.	Infant Mortality Rate (per 1,000 live births).	Difference from rate for group.	Standard error of I.M.R.	Significantly above or below I.M.R. of group.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(4c)—*contd.*													
Warrington..	N4	124	+14	3·9	High	121	+12	3·9	High	82	+23	7·8	High
WestBromwich	M1	116	+ 6	3·6		113	+ 4	3·5		68	+ 9	6·6	
West Hartlepool	N1	117	+ 7	3·9		118	+ 9	3·9	High	63	+ 4	7·0	
Wigan ..	N4	128	+18	3·9	High	138	+29	4·0	High	92	+33	8·2	High
Worcester ..	M1	101	− 9	3·8	Low	101	− 8	3·7	Low	49	−10	7·7	
York ..	N3	100	−10	3·1	Low	98	−11	2·9	Low	48	−11	5·7	
MerthyrTydfil	W1	129	+19	4·3	High	129	+20	4·3	High	79	+20	9·4	High
Newport ..	W1	110	0	3·2		114	+ 5	3·3		62	+ 3	6·3	
(4d) *County Boroughs outside Greater London with less than 50,000 population in 1931*	—	103				104				50			
Burton-upon-Trent ..	M1	100	− 3	4·1		100	− 4	4·1		51	+ 1	8·6	
Canterbury ..	S E	88	−15	4·9	Low	87	−17	4·8	Low	30	−20	9·0	Low
Chester ..	N4	118	+15	4·8	High	119	+15	4·7	High	59	+ 9	9·4	
(5) *Other Towns outside Greater London with 50,000 but less than 100,000 population in 1931*	—	99				100				51			
Ashton-under-Lyne ..	N4	129	+30	4·8	High	141	+41	5·0	High	63	+12	10·1	
Cambridge ..	E	79	−20	2·8	Low	73	−27	2·7	Low	38	−13	6·7	
Cheltenham..	M1	90	− 9	3·3	Low	97	− 3	3·4		56	+ 5	9·1	
Chesterfield..	M2	108	+ 9	4·0	High	112	+12	4·0	High	53	+ 2	7·3	
Crosby ..	N4	107	+ 8	4·0	High	106	+ 6	4·0		56	+ 5	8·2	
Gillingham ..	S E	90	− 9	3·5	Low	93	− 7	3·4	Low	53	+ 2	7·1	
Hove ..	S E	95	− 4	3·1		95	− 5	3·0		33	−18	7·6	Low
Luton ..	S E	88	−11	3·0	Low	90	−10	2·9	Low	37	−14	4·9	Low
Newcastle-under-Lyme	M1	107	+ 8	4·0	High	114	+14	4·1	High	70	+19	8·0	High
Poole ..	S W	89	−10	3·1	Low	88	−12	3·1	Low	46	− 5	6·8	
Stanley (Durham)	N1	112	+13	7·0		120	+20	5·1	High	60	+ 9	9·1	
Stockton-on-Tees ..	N1	104	+ 5	3·8		112	+12	3·9	High	71	+20	7·7	High
Stretford ..	N4	109	+10	4·1	High	108	+ 8	4·0	High	59	+ 8	8·8	
Swindon ..	S W	102	+ 3	3·8		91	− 9	3·5	Low	48	− 3	8·0	
Thurrock ..	S E	86	−13	4·0	Low	85	−15	3·4	Low	43	− 8	6·0	
Watford ..	S E	85	−14	3·3	Low	79	−21	3·1	Low	29	−22	5·5	Low

or " low " is entered in columns 4, 8 or 12 to indicate the significant excess or defect over the group rate. If it is desired to make comparison with the national mortality instead of with the group rate, 100 is subtracted from the S.M.R. or 58 from the infant mortality rate, and if the resultant excess or defect amounts to twice the standard error given in columns 3, 7 or 11 it may be regarded as significant.

Standardized Mortality of the Great Towns, grouped according to their population.

In Table VIII standardized mortality ratios (100 times the ratio of the adjusted death rate to the national rate as given in column 14 of Table 17) are given in columns 1 and 5 for 1936 and 1937 for each of the 152 great towns. These towns comprise each metropolitan borough and each county borough, whatever the population, together with every other town whose population was 50,000 or over at the 1931 census. They have been arranged in three groups of Greater London urban areas, namely, the metropolitan boroughs, outer ring towns of 100,000 or more population in 1931, and outer ring towns of between 50,000 and 100,000 population; four groups of county boroughs outside Greater London, with populations of 250,000 and over, 100,000 to 250,000 (including Rhondda urban district in this group), 50,000 to 100,000, and below 50,000 respectively; and a group of other towns outside Greater London having populations between 50,000 and 100,000. The standardized mortality ratios for each of the eight groups have been calculated and are shown in the Table. These have been summarized below, with addition of the corresponding ratios in 1935, and for comparison the ratios for the residual aggregate of other urban districts or small towns outside Greater London with populations below 50,000 in 1931 have been added (the S.M.R. for this group being the same as the national figure in 1935 and 1936).

		1935	*1936*	*1937*
England and Wales (all areas)		100	100	100
County boroughs outside Greater London	250,000 and over	116	112	110
	100,000 but under 250,000	114	113	115
	50,000 but under 100,000	110	110	109
	Under 50,000	109	103	104
Other towns outside Greater London	50,000 but under 100,000	108	99	100
	Urban districts under 50,000	100	100	101
London Administrative County		99	104	103
Towns of London's outer ring	100,000 and over	90	92	93
	50,000 but under 100,000	81	84	82

In 1935 the county boroughs presented a regular decrease in the S.M.R. with diminishing size as measured by population, and this was also true in 1936 and 1937 except that the group of largest towns had a slight advantage over the group next in size. The Greater London rates were also highest for the large population units in each year. Urban areas outside Greater London without county borough status but with populations between 50,000 and 100,000 returned an average mortality below that for the county boroughs of the same size in each year.

The method of grouping here used cuts across the regional grouping but has the advantage of bringing together for comparison

towns of similar size and of not excluding from separate consideration those large urban areas, such as Rhondda, which do not happen to have become county boroughs. It takes no account, however, of combinations of smaller contiguous urban areas whose total population exceeds 50,000 nor of the fact that in many instances several of the large towns are really contiguous and their combined population would place them in another group. Regional sub-grouping of the towns of similar size can be readily carried out by means of the regional index letters in Table VIII and a comparison of the northern towns with those in the south-east, east or south-west is made below for populations of two sizes by taking the simple arithmetic mean of the mortality figures of the areas included.

Average S.M.R. of towns of the size and position specified.

	50 to 100 thousand population.			100 to 250 thousand population.		
	1935.	1936.	1937.	1935.	1936.	1937.
Northern regions :						
County boroughs	117	117	116	125	123	126
Other towns	114	112	117	—	—	—
South-East (excluding Greater London), East and South-West :						
County boroughs	92	93	92	95	95	94
Other towns	90	90	87	—	—	—

These ratios show that county borough status, with all which that implies in methods of health administration, does not necessarily result in lower death rates than obtain in similar towns without such status, but it must be remembered that most of the county boroughs are old established industrial towns with densities of population usually higher than in the other towns, many of which have grown out of suburban or residential areas. It is also evident that there has been during the last three years an excess of mortality in Northern over that in Southern towns of the same size amounting to 25 or 30 per cent.; in 1937 it was 26 and 35 per cent. in the two groups of county boroughs and 34 per cent. in the other towns of 50,000 population or over. This phenomenon has been noticed ever since mortality statistics have been obtainable, but its persistence, which must be due in the main to factors which are remediable, such as smoke, overcrowding and under-nutrition, indicates that much remains to be done before the state of health in our Northern towns can be regarded with complacency.

Table VIII further shows for each town the amount by which the mortality differed from that of the group as a whole and in the adjacent column gives a measure by which it can be at once seen

what importance, from a statistical standpoint, may be attached to that difference, or alternatively to the excess or defect from the national or any other rate. The criterion by which the significance of differences is measured is explained in the previous section; the words " high " or " low" in Table VIII indicate for a town that the difference between its mortality and that of the group in a positive or negative sense is at least twice as great as its standard error and is unlikely to have arisen merely from fluctuations due to a small population.

Of the metropolitan boroughs, Finsbury, Southwark, Bethnal Green, Stepney, Bermondsey, Poplar, Shoreditch and Islington, arranged in descending order of their mortality ratios, gave rates significantly above the level of 103 for London as a whole in 1937, and on the other hand Hackney, Hampstead, Lewisham, Wandsworth, Westminster and Woolwich had significantly low rates. In London's outer ring, West Ham and Tottenham gave significantly high rates compared with the group figure of 93 and those for Acton, Brentford and Chiswick, Wimbledon and Wood Green were significantly in excess of the group figure of 82. Of the largest county boroughs, Stoke-on-Trent, Manchester, Liverpool, Newcastle-on-Tyne, Bradford, Leeds and Sheffield arranged in descending order, gave high rates and Birmingham, Bristol, Leicester and Portsmouth gave low rates. Of the towns ranking next in size, Oldham, Salford, Rhondda, Middlesbrough, Blackburn, Preston, Sunderland, Bolton, Gateshead and Blackpool, arranged in descending order, gave rates significantly above the group rate of 115, whilst the south coast towns and Southend, Coventry, Derby, Norwich, Walsall, Wolverhampton and Cardiff had low rates. The smaller towns of between 50 and 100 thousand population outside Greater London had mortalities ranging from 73 for Cambridge to 141 for Ashton-under-Lyne, fifteen northern towns and Chesterfield, Merthyr Tydfil and Newcastle-under-Lyme giving rates significantly above, whilst three northern and nineteen other towns gave rates significantly below the group level.

Mortality at different portions of the year.—Table 4 gives the quarterly deaths for each sex, and death rates per 1,000 persons in decennial periods from 1841 to 1930 and each of the last 10 years. From that table the present stability of the death-rate in the last three quarters of the year is apparent, for the average mortality in these quarters during 1927–36 ranged only from 10·7 to 11·4, being 11·2 in 1936 and 1937, while the death-rate in the March quarter fluctuated between 13·2 in 1935, and 20·9 in 1929 and was 16·2 in 1937.

The contributions of the four quarters to the year's mortality in quinquennial periods since 1851, and in each year since 1931, are shown in Table IX. It should be noted, however, that the crude

quarterly mortalities in Tables IX and 4 do not measure the real improvement since 1901 owing to the increasing average age of the population, but the ratios in the right hand portion of the table would not be changed if the rates were standardized.

The September quarter showed the lowest rate of the four quarters in each quinquennium except 1896–1900, when its mean rate was exceeded by those of the June and December quarters. The March quarter has registered the highest rate of the four quarters in each quinquennium, but the relative excess over the September quarter has varied greatly

The numbers of deaths from different causes which occurred in each of the first nine months of 1937 and in the last three months of 1936 are set out in Table 23.

Table IX.—Quarterly Death-rates in each quinquennium 1851–1935 and in each year 1931 to 1937, with ratio to yearly rate taken as 100.

	Death-rate per 1,000 living.				Ratio to yearly rate taken as 100.			
	March.	June.	September.	December.	March.	June.	September.	December.
1851–55	25·3	22·5	21·0	21·9	111	99	93	96
1856–60	24·1	21·6	19·6	21·9	111	99	90	100
1861–65	25·7	22·0	20·4	22·3	114	97	90	99
1866–70	24·7	21·6	21·5	22·0	110	96	96	98
1871–75	24·3	21·1	20·4	22·1	110	96	93	100
1876–80	23·2	20·7	18·8	20·6	112	100	90	99
1881–85	21·4	19·3	17·6	19·4	110	99	91	100
1886–90	21·7	18·0	17·0	18·9	115	95	90	100
1891–95	21·8	18·5	16·4	18·1	117	99	88	97
1896–1900	19·5	16·6	17·5	17·2	110	94	99	97
1901–05	17·9	15·2	14·9	16·1	112	95	93	101
1906–10	17·4	14·1	12·6	14·7	118	96	86	100
1911–15	16·9	13·7	12·7	14·0	118	96	89	98
1916–20	17·5	13·5	10·9	15·8	122	94	76	110
1921–25	15·1	11·9	9·6	12·0	124	98	79	98
1926–30	15·9	11·5	9·4	11·6	131	95	78	96
1931–35	15·4	11·5	9·6	11·7	128	96	80	98
1931	16·5	11·5	9·6	11·7	134	93	78	95
1932	15·4	11·6	9·7	11·5	128	97	81	96
1933	17·1	10·8	9·4	12·0	139	88	76	98
1934	14.6	11.8	9.6	11.2	124	100	81	95
1935	13·2	12·0	9·8	12·0	113	103	84	103
1936	15·1	11·8	9·7	12·0	125	98	80	99
1937	16·2	11·6	9·7	12·3	131	94	78	99

Mortality of each sex.—The excess of male over female standardized mortality in 1937 was 28 per cent., compared with 27 in

1936 and 1935. Comparing the sex rates for the quinquennium 1931–35, age by age, male excess occurred at each age group except 10–15 and was greatest at 45–55. In 1937 male excess was present at every age and was greatest at 55–65. The sex ratios recorded in Table X are derived from Table 5, with substitution for 1911–15 and 1916–20 of rates based on the total male population and all deaths registered in this country for those in Table 5, which refer to civilian males only in those periods.

At ages under 5 male excess increased continually from 15 per cent. in 1866–70 to 26 in 1931–35. At 5–10 a small female excess during 1891–1910 gave place to a male excess of 10 per cent. in the last two quinquennial periods and 18 per cent. in 1937, when the death rates both for boys and girls were the lowest ever recorded. At 10–15 there was no important difference between the sexes in 1921–35 but in 1936 and 1937 the mortality of boys of this age exceeded that of girls. At 15–20 a reversal of the sex ratio took place at the end of last century and during 1927–36 the male excess ranged between 5 and 14 per cent. but in 1937 reached 17 per cent. At 20–25 and 25–35, the male excess, after reaching a maximum in 1911–20, then declined and during the last 10 years has ranged from 3 to 15 per cent.

Table X.—Mortality of Males per cent. of that of Females at Various Ages from 1841–45 onwards. (*See* **Table 5.**)

	All Ages Standardized.	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85 and upwards
1841–45	109	117	102	92	88	105	95	101	114	111	111	109	106
1846–50	108	116	103	95	91	104	94	99	113	112	111	109	107
1851–55	110	116	104	98	90	103	97	102	118	114	112	110	106
1856–60	109	115	99	96	90	102	96	103	118	115	111	108	107
1861–65	111	115	102	98	93	105	100	109	122	118	112	109	110
1866–70	113	115	107	100	94	106	105	113	124	120	115	109	111
1871–75	115	117	108	100	97	109	109	119	128	121	114	111	110
1876–80	116	118	107	97	96	108	109	119	129	122	114	112	111
1881–85	115	118	102	97	96	102	104	117	127	122	116	113	112
1886–90	116	119	100	97	98	106	107	117	129	122	117	112	114
1891–95	116	119	98	96	100	108	108	118	128	121	115	111	110
1896–00	118	118	98	96	106	120	116	122	129	124	117	113	109
1901–05	119	119	97	95	107	119	118	121	130	128	119	115	110
1906–10	120	119	97	95	107	121	118	121	129	128	121	115	113
1911–15	122	120	100	95	111	122	124	126	132	133	124	118	115
1916–20	124	121	100	92	114	122	124	131	135	137	132	121	111
1921–25	122	124	104	100	100	113	114	130	132	133	127	119	110
1926–30	124	125	110	105	106	108	112	134	140	136	130	121	107
1931–35	124	126	110	100	109	114	106	126	142	139	132	123	113
1926 ..	123	124	109	100	104	107	112	133	135	134	129	123	111
1927 ..	123	125	109	107	104	110	112	135	137	134	129	120	108
1928 ..	125	126	109	113	108	103	112	130	138	136	130	123	110
1929 ..	122	122	113	100	108	110	111	139	143	134	126	117	103
1930 ..	127	128	110	104	109	112	111	133	144	139	133	121	103
1931 ..	126	128	115	100	108	114	106	129	140	135	132	121	111
1932 ..	125	125	116	108	114	114	110	123	135	137	134	123	110
1933 ..	124	126	110	107	113	114	109	124	141	137	129	122	110
1934 ..	125	124	104	100	109	115	107	124	142	142	132	124	111
1935 ..	127	126	111	100	105	112	107	125	146	143	134	126	112
1936 ..	127	128	117	118	105	112	111	126	142	147	133	127	112
1937 ..	128	127	118	109	117	108	111	128	146	149	133	125	108

At 35–45 male excess increased until 1926–30 but was smaller in 1931–37, and at 45–65 it increased from about 12 per cent. in 1846–50 to about 40 per cent. in 1931–35 with further increase to about 47 per cent. in 1937. At ages over 65 the male excess has not greatly changed in the last 20 years.

The causes of death accounting for this large male excess may be gathered from Table 8, in which the mortality disadvantage to females arising from their greater average age is neutralized by reference of the rates for both sexes to a common population basis.

The causes chiefly responsible for the excess, with the contribution of each to its total of 2,290 per million, are seen to be respiratory diseases (460), heart disease (428), accident (288), digestive diseases (192), tuberculosis (155), cancer (120), arterio-sclerosis (106), and suicide (71), which jointly contribute 79 per cent. of the total male excess. The principal causes common to both sexes shown in Table 8 for which female standardized mortality exceeds that of males, are, in order of numerical importance, mitral or unspecified valvular disease, rheumatoid and osteo-arthritis, diabetes, whooping-cough, diphtheria, non-malignant tumours, other diseases of the liver and gall bladder (not cirrhosis), gall stones, pernicious anæmia, disordered action of the heart, accidental burns, peritonitis, rheumatic fever and insanity (not general paralysis of the insane).

Infant Mortality.

Of the 509,574 deaths registered during the year, 35,175, or 6·9 per cent., were those of infants under one year of age.

The rate of infant mortality resulting from these deaths is 58 per 1,000 live births; this rate is below that of the preceding year (59) but above the lowest recorded (57 in 1935).

The rates in the four quarters of the year were 74, 54, 43 and 61 respectively, being lower in the March and September quarters, but higher in the December quarter than in 1936.

Compared with the mean rates of the preceding 5 years an improvement was recorded in each quarter except December.

Table XI traces the changes in the quarterly incidence of infantile mortality during the last 67 years, and shows, in conjunction with Table XII, that until 1901–05, and again, but to a very slight degree, in 1911–15, while the coldest months of the year yielded the highest general death-rate, the hot summer months levied the highest toll on infant life.

During the present century, however, in all four quarters the infant death-rate has fallen in each successive quinquennium, but with great inequality. Comparing 1937 with 1896–1900, the fall amounts to 48 per cent. in the March quarter, 56 in the June, 59

in the December, and 80 per cent. in the September quarter. The mortality in the third quarter has since 1916–20 yielded the lowest quarterly rate, while the March quarter has in each quinquennium yielded the highest.

Table XI.—Average Rate of Infantile Mortality by Quarters in Quinquennial periods, 1871–1935, and in each year 1931 to 1937

	Yearly Average.	Quarterly Averages.			
		March.	June.	September.	December.
1871–75	153	151	133	180	149
1876–80	145	147	128	161	143
1881–85	139	140	125	152	139
1886–90	145	146	125	163	147
1891–95	151	151	132	169	151
1896–1900	156	142	124	212	148
1901–05	138	137	113	162	140
1906–10	117	124	98	120	128
1911–15	110	119	91	120	109
1916–20	90	116	83	75	91
1921–25	76	94	70	62	77
1926–30	68	91	60	52	69
1931–35	62	82	57	47	63
1931	66	94	59	46	67
1932	65	88	59	50	65
1933	64	84	53	49	69
1934	59	78	56	46	55
1935	57	68	56	45	60
1936	59	81	54	44	56
1937	58	74	54	43	61

Table XII.—Infant Mortality, distinguishing Mortality from Diarrhœal Diseases, 1861–1937.

Deaths under 1 year of age per 1,000 Live Births.

Year.	Diarrhœal Diseases.	Other Causes.	All Causes.	Year.	Diarrhœal Diseases.	Other Causes.	All Causes.
1861–65	15	136	151	1926	8	62	70
1866–70	20	137	157	1927	6	64	70
1871–75	19	134	153	1928	6	59	65
1876–80	16	129	145	1929	7	67	74
1881–85	14	125	139	1930	5	55	60
1886–90	17	128	145				
1891–95	20	131	151	1931	5	61	66
1896–1900	31	125	156	1932	6	59	65
1901–05	23	115	138	1933	6	58	64
1906–10	18	99	117	1934	5	54	59
1911–15	19	91	110	1935	5	52	57
1916–20	9	81	90				
1921–25	8	68	76	1936	5	54	59
1926–30	6	62	68	1937	5	53	58
1931–35	5	57	62				

The changes in the infant mortality rates from all causes and from diarrhœal diseases since 1861–65 are shown in Table XII. The diarrhœal rate has declined from 31 per 1,000 live births in 1896–1900 to 5 in recent years. The hot summers of 1929, 1933, 1934, 1935 and 1937 produced no important increases in this rate.

Table XIII shows that the fall during the six quinquennia for which detailed age distinction is available was continuous at every age period after the first week of life. On the first day of life the 1931–35 rate was slightly above that of the preceding quinquennium and at 1–7 days a further increase followed that recorded for 1926–30. For the first month of life the fall between 1906–10 and 1931–35 amounted to 22 per cent., whilst at 4–13 weeks it was 57 per cent. and at the later age groups 61 or 62 per cent.

At each age period except the first day the 1937 rate was below the mean rate for 1931–35, the amount of improvement at ages 0–1, 1–3, 3–6, 6–9 and 9–12 months being 5, 5, 2, 11 and 25 per cent. respectively. The neo-natal rate of 29·8 per 1,000 live births at 0–4 weeks was the lowest ever recorded. In Table XIV these deaths are considered in conjunction with stillbirths, with which they are closely allied, the rates per 1,000 live or still births in each year since registration of stillbirths began being shown. The combined still-birth and neo-natal rate has fallen each year since 1933.

Distribution of Infant Mortality.—Table XV shows how infant mortality was distributed in 1937 between the sexes and throughout the country.

For convenience in the interpretation of this and similar tables where the regional subdivision is employed, the counties comprising each region are given below.*

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* *Regional Summary.*—The country was re-divided into regions in 1931, after consultation with other Government Departments, with a view to securing greater homogeneity in the character of the sectional populations than was provided by the old grouping into North, Midlands, South (including London) and Wales.

The counties in the various regions are as follow :—

South East.	*North* I.	*Midland* I.	*East.*	*Wales* I.
Bedfordshire.	Durham.	Gloucestershire.	Cambridgeshire.	Brecknockshire.
Berkshire.	Northumberland.	Herefordshire.	Ely, Isle of.	Carmarthenshire.
Buckinghamshire.		Shropshire.	Huntingdonshire.	Glamorganshire.
Essex.	*North* II.	Staffordshire.	Lincolnshire—	Monmouthshire.
Hertfordshire.	Cumberland.	Warwickshire.	Parts of Holland.	
Kent.	Westmorland.	Worcestershire.	,, Kesteven.	*Wales* II.
London.	Yorkshire.		,, Lindsey.	Anglesey.
Middlesex.	East Riding.	*Midland* II.	Norfolk.	Caernarvonshire.
Oxfordshire.	North Riding.	Derbyshire.	Rutlandshire.	Cardiganshire.
Southampton.		Leicestershire.	Suffolk, East.	Denbighshire.
Surrey.	*North* III.	Northamptonshire.	,, West.	Flintshire.
Sussex, East.	Yorkshire,	Nottinghamshire.		Merionethshire.
,, West.	West Riding.	Peterborough,	*South West.*	Montgomeryshire.
Wight, Isle of.	York C.B.	Soke of.	Cornwall.	Pembrokeshire.
			Devonshire.	Radnorshire.
	North IV.		Dorsetshire.	
	Cheshire.		Somersetshire.	
	Lancashire.		Wiltshire.	

For the constitution of Greater London, *see* pp. 63–65 of the Preliminary Report on the Census of England and Wales, 1931.

Table XIII.—Age Distribution of Infant Mortality, 1881–1937.

Rates per 1,000 (Live) Births.

Year.	Days.		Weeks.				Months.					Total under one year.
	0–1	1–7	0–1	1–2	2–3	3–4	Total under four weeks	Four weeks to 3 m'nths	3–6	6–9	9–12	
1881–1885 ..	—	—	—	—	—	—	67		28	44		139
1886–1890 ..	—	—	—	—	—	—	69		30	46		145
1891–1895 ..	—	—	—	—	—	—	74		31	46		151
1896–1900 ..	—	—	—	—	—	—	74		34	48		156
1901–1905 ..	—	—	—	—	—	—	70		28	40		138
1906–1910 ..	11·5	13·0	24·5	5·8	5·7	4·2	40·2	22·8	22·0	17·3	14·8	117·1
1911–1915 ..	11·4	12·7	24·1	5·7	5·3	3·9	39·0	20·2	19·6	15·9	14·1	108·7
1916–1920 ..	11·0	12·4	23·4	5·6	4·7	3·4	37·0	16·5	14·6	12·0	10·8	90·9
1921–1925 ..	10·4	11·3	21·7	5·0	3·9	2·8	33·4	12·8	11·3	9·2	8·3	74·9
1926–1930 ..	10·3	11·5	21·8	4·3	3·2	2·4	31·8	10·9	9·6	8·1	7·5	67·9
1931–1935 ..	10·7	11·7	22·4	3·9	2·9	2·2	31·4	9·9	8·5	6·6	5·7	62·2
1906 ..	11·8	13·2	25·0	6·1	6·2	4·6	41·9	25·7	27·0	20·7	17·2	132·5
1907 ..	11·3	13·1	24·4	6·0	5·9	4·5	40·7	23·3	21·3	17·3	15·1	117·6
1908 ..	11·5	12·8	24·3	5·9	5·8	4·3	40·3	24·2	23 6	17·7	14·6	120·4
1909 ..	11·6	13·2	24·7	5·7	5·3	4·0	39·8	20·4	19·2	15·6	13·8	108·7
1910 ..	11·5	12·5	24·1	5·4	5·1	3·8	38·5	20·0	18·8	15·0	13·2	105·4
1911 ..	11·6	12·7	24·3	6·0	6·0	4·5	40·6	24·7	25·9	20·6	17·4	129·2
1912 ..	11·3	12·9	24·2	5·6	5·0	3·7	38·4	17·7	14·9	12·5	11·4	94·7
1913 ..	11·8	12·7	24·5	5·8	5·4	3·9	39·5	20·3	19·8	15·7	13·6	108·9
1914 ..	11·4	12·7	24·1	5·5	5·0	3·9	38·5	19·3	18·7	15·0	13·0	104·4
1915 ..	10·9	12·5	23·4	5·7	5·0	3·7	37·7	18·6	18·2	16·0	15·2	105·8
1916 ..	10·9	12·3	23·2	5·6	4·9	3·4	36·9	16·9	15·2	11·7	10·3	91·1
1917 ..	11·0	12·4	23·4	5·6	4·8	3·4	37·1	16·9	15·0	11·6	10·6	91·1
1918 ..	11·1	12·1	23·2	5·5	4·6	3·4	36·6	17·1	16·1	14·4	13·7	97·9
1919 ..	12·2	13·7	25·9	6·1	4·9	3·6	40·4	16·4	14·4	11·8	10·3	93·2
1920 ..	10·4	11·5	21·9	5·3	4·6	3·3	35·0	15·5	13·0	11·0	10·0	84·5
1921 ..	10·8	11 6	22·4	5·4	4·5	3·0	35·2	14·7	13·7	9·7	7·8	81·2
1922 ..	10·4	11·6	22·0	5·2	4·1	2·8	33·9	12·4	10·6	9·2	8·6	74·7
1923 ..	10·2	10·9	21·1	4·6	3·6	2·6	31·9	11·4	10·0	8·3	7·6	69·2
1924 ..	10·6	11·2	21·8	4·8	3·8	2·6	33·0	12·4	10·8	9·3	8·8	74·2
1925 ..	10·1	11·1	21·2	4·7	3·7	2·7	32·3	12·5	11·2	9·4	9·0	74·5
1926 ..	10·0	11·3	21·3	4·6	3·6	2·5	31·9	11·6	10·4	8·6	7·7	70·2
1927 ..	10·6	11·6	22·2	4·3	3·4	2·5	32·3	10·7	9·7	8·7	8·2	69·7
1928 ..	10·4	11·2	21·6	4·1	3·0	2·4	31·1	10·7	9·2	7·4	6·8	65·1
1929 ..	10·4	11·9	22·3	4·6	3·3	2·6	32·8	11·6	10·7	9·9	9·4	74·4
1930 ..	10·4	11·6	22·0	3·8	2·9	2·2	30·9	9·6	7·8	6·1	5·5	60·0
1931 ..	10·4	11·7	22·1	4·0	3·1	2·4	31·6	10·9	9·3	7·8	6·8	66·4
1932 ..	10·6	11·8	22·4	3·8	3·0	2·4	31·6	10·8	9·1	7·2	6·3	65·0
1933 ..	11·1	11·8	22·9	4·0	3·1	2·2	32·2	9·9	8·8	6·8	6·0	63·7
1934 ..	10·9	11·7	22·6	3·9	2·8	2·0	31·3	8·8	7·5	5·8	5·1	58·6
1935 ..	10·8	11·3	22·0	3·7	2·7	2·0	30·4	9·1	7·7	5·4	4·3	56·9
1936 ..	10·7	11·2	21·9	3·5	2·7	2·0	30·2	9·3	8·3	6·0	4·9	58·5
1937 ..	10·8	11·2	22·0	3·5	2·5	1·8	29·8	9·4	8·3	5·9	4·3	57·6

Rates per 1,000 of those for 1906–10.

1906–1910 ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1911–1915 ..	991	977	984	983	930	929	970	886	891	919	953	928
1916–1920 ..	957	954	955	966	825	810	920	724	664	694	730	776
1921–1925 ..	904	869	886	862	684	667	831	561	514	532	561	640
1926–1930 ..	896	885	890	741	561	571	791	478	436	468	507	580
1931–1935 ..	930	900	914	672	509	524	781	434	386	382	385	531
1926 ..	870	869	869	793	632	595	794	509	473	497	520	599
1927 ..	922	892	906	741	596	595	803	469	441	503	554	595
1928 ..	904	862	882	707	526	571	774	469	418	428	459	556
1929 ..	904	915	910	793	579	619	816	509	486	572	635	635
1930 ..	904	892	898	655	509	524	769	421	355	353	372	512
1931 ..	904	900	902	690	544	571	786	478	423	451	459	567
1932 ..	922	908	914	655	526	571	786	474	414	416	426	555
1933 ..	965	908	935	690	544	524	801	434	400	393	405	544
1934 ..	948	900	922	672	491	476	779	386	341	335	345	500
1935 ..	939	869	898	638	474	476	756	399	350	312	291	486
1936 ..	930	862	894	603	474	476	751	408	377	347	331	500
1937 ..	939	862	898	603	439	429	741	412	377	341	291	492

Table XIV.—Numbers of Stillbirths and Neo-natal Deaths and Rates per 1,000 Live and Stillbirths, 1928–1937.

	Stillbirths.		Neo-natal deaths. (ages 0–4 weeks)		Combined rate.
	Number.	Rate.	Number.	Rate.	
1928	27,580	40·1	20,513	29·8	69·9
1929	26,847	40·0	21,136	31·5	71·5
1930	27,577	40·8	20,060	29·7	70·5
1931	26,933	40·9	19,966	30·3	71·2
1932	26,471	41·3	19,388	30·3	71·6
1933	25,084	41·4	18,688	30·9	72·3
1934	25,209	40·5	18,711	30·0	70·5
1935	25,435	40·7	18,192	29·1	69·8
1936	25,045	39·7	18,254	29·0	68·7
1937	24,806	39·0	18,168	28·6	67·6

North I had the highest regional infant mortality rate (29 per cent. in excess of the national rate compared with 27 in 1936), followed by North IV and North II, whilst the South East outside Greater London had the lowest (25 per cent. below the national rate compared with 23 in 1936). North III, the South-East, South-West, East, Midlands and Wales II registered improvements on the rates of the preceding year, whereas North II, IV and Wales I showed increases ranging from 2 to 8 per cent.

The rates for the aggregates of different classes of area are highest for the county boroughs and lowest for London's outer ring, where infant mortality was even lower than in the aggregate of all the rural districts outside Greater London, and was 11·5 per 1,000 live births less than in the Administrative County.

The Northern rate of 67·7 was 36 per cent. in excess of that in the South-East and 47 per cent. in excess of that in the South-West. Ten years before, in 1927, the Northern rate was 51 per cent. above that of the South as a whole. When all allowances have been made for the effects of climate and differences in parental selection it must be concluded that the North still suffers an infant mortality which is capable of considerable reduction. Indeed, comparison with the rates of other countries, given in Table XXVI and with the rates around 30 per 1,000 reached by several Southern county boroughs (Table VIII) makes it apparent that even the rate of 43 for the South-East, excluding Greater London, is much above what may yet be attained.

The handicap for the urban infant has diminished since 1911, as may be seen from a comparison between the infant mortality rates in recent years and the average rates during 1911–14 in Table XVI. During the 25 years the excess of county borough over rural infant

mortality has fallen from 39 to about 30 per cent. Comparison with Table VII indicates that whereas in 1911–14 the urban handicap was greater at all ages combined than in the first year of life, the urban disadvantages in mortality have in recent years been rather more pronounced in infancy (32 per cent. excess in 1937 compared with 27 per cent. for all ages combined).

Table XV.—Distribution of Infant Mortality, 1937.

	Deaths per 1,000 (Live) Births.			Mortality per cent. of that in England and Wales.		Deaths per 1,000 (Live) Births.			Mortality per cent. of that in England and Wales.
	Males.	Females.	Both Sexes.	Both Sexes.		Males.	Females.	Both Sexes.	Both Sexes.
England and Wales	64·7	50·2	57·6	100					
South East ..	56·8	42·1	49·7	86	East	53·6	43·2	48·6	84
Greater London	61·7	45·6	53·9	94	South West	52·3	39·6	46·1	80
Remainder of South East ..	49·5	36·8	43·3	75	Wales	69·4	55·2	62·5	109
North	75·2	59·8	67·7	118	„ I	69·5	56·4	63·2	110
North I ..	81·8	65·9	74·1	129	„ II	69·1	51·6	60·6	105
„ II ..	76·2	56·4	66·5	115	County Boroughs* ..	73·0	58·5	65·9	114
„ III ..	67·0	53·0	60·2	105	Other Urban Districts*	63·3	47·1	55·4	96
„ IV ..	76·9	62·0	69·6	121	Rural Districts* ..	55·1	45·2	50·3	87
Midland	64·2	50·0	57·3	99	Greater London { Admin. Co.	68·7	51·1	60·2	105
Midland I ..	64·0	49·9	57·2	99	Greater London { Outer Ring	55·9	41·1	48·7	85
„ II ..	64·6	50·3	57·6	100					

* Excluding Greater London.

In Table VII of the Review for 1932 it was shown that when the county boroughs and county aggregates of urban and rural districts were grouped according to their mean densities per room, the infant mortality rates in 1930–32 increased regularly with the density. Thus whilst county boroughs with mean densities less than 0·7 persons per room had an average rate of 57·6 per 1,000 births, those with densities exceeding 1·15 per room had an average rate of 92·7. A similar progression was evident for the county aggregates, but for the Metropolitan boroughs the increase was only noticeable for those with mean densities exceeding 1·3 persons per room. It must be remembered, however, that the mean density per room tends to increase from South to North, this being evident when the county boroughs are grouped according to the zones of latitude in which they are situated and according to the percentage of the populations in private families who were living more than two per room in 1931 (*see* Table VII of the Review for 1933).

In Table XVII the trend of infant mortality attributed to the group of congenital causes (premature birth, debility, malformations, etc., Nos. 157–161 of the International List), and to all

other causes, since 1930–32, is compared for (*a*) the group of 14 county boroughs* having densities of 1·00 or more persons per

Table XVI.—Infant Mortality Rates in London and in Urban and Rural Aggregates and percentage excess in the County Boroughs compared with the Rural Districts, 1911–14 and 1931–37.

	England and Wales.	London A.C.	County boroughs.*	Other urban districts.*	Rural districts.*	Per cent. excess in county boroughs over rural districts.
Average, 1911–14	*110*	*108*	*125*	*107*	*90*	*+39*
1931 ..	66	65	77	65	58	+33
1932 ..	65	67	75	63	58	+29
1933 ..	64	60	75	62	56	+34
1934 ..	59	67	66	55	53	+25
Average, 1931–34	*64*	*65*	*73*	*61*	*56*	*+30*
1935 ..	57	58	66	55	49	+35
1936 ..	59	66	66	55	53	+25
1937 ..	58	60	66	55	50	+32

* Outside Greater London from 1931 onwards.

room, at the census of 1931, (*b*) the group of 6 county aggregates of urban districts† having average densities of 0·85 or more persons per room, (*c*) the group of 15 county aggregates of rural districts‡ having average densities below 0·70 persons per room, (*d*) all the county boroughs with densities below 1 per room, (*e*) London, with a density per room of 0·98, and (*f*) England and Wales as a whole, with an average density of 0·83.

No improvement has occurred in the rate from congenital causes in any of these groups of areas since 1930–32 except in London. The 1937 mortality rates from causes other than congenital show improvements of 11 and 25 per cent. respectively in the two groups of areas with least satisfactory housing indices, compared with 19 per cent. in the country as a whole and 15 and 19 per cent. respectively in the rural areas and county boroughs having lowest densities per room. The London rate from "other causes" is greatly

* Dewsbury, Dudley, Gateshead, Middlesbrough, Newcastle-on-Tyne, St. Helens, South Shields, Stoke-on-Trent, Sunderland, Tynemouth, West Ham, West Hartlepool, West Bromwich, Wigan.

† Durham, Northumberland, Staffordshire, Yorkshire West Riding, Glamorganshire, Monmouthshire.

‡ Buckinghamshire, Cambridgeshire, Cornwall, Devonshire, Huntingdonshire, Middlesex, Norfolk, Rutlandshire, Somersetshire, Surrey, Sussex East, Sussex West, Isle of Wight, Caernarvonshire, Cardiganshire.

influenced by the biennial periodicity of measles and the triennium 1930–32 included two measles years; in even years it has risen 7 per cent. above and in odd years has fallen below the 1930–32 rate, but the 1937 rate is above those of 1933 and 1935. The high rate of 43·1 per 1,000 live births for group (*a*) is in part attributable to the fact that 11 of the 14 county boroughs are situated in the north, and in

Table XVII.—Infant Mortality from Congenital and Other Causes, in groups of areas of certain densities of persons per room in 1931:—1930-32, 1933, 1934, 1935, 1936 and 1937.

	Congenital Causes.						Other Causes.					
	County boroughs with 1 or more persons per room.	County aggregates of U.D.'s with ·85 or more persons per room.	County aggregates of R.D.'s with less than ·7 persons per room.	County boroughs with less than 1 per room.	London A.C. (·98 persons per room).	England and Wales.	County boroughs with 1 or more persons per room.	County aggregates of U.D.'s with ·85 or more persons per room.	County aggregates of R.D.'S with less than ·7 persons per room.	County boroughs with less than 1 per room.	London A.C. (·98 persons per room).	England and Wales.
	a	*b*	*c*	*d*	*e*	*f*	*a*	*b*	*c*	*d*	*e*	*f*
	Rates per 1,000 Live Births.											
1930–32	34·8	35·3	28·5	32·8	25·5	31·1	48·5	37·4	20·1	37·6	37·9	32·7
1933	38·6	37·5	29·7	35·0	27·1	33·1	47·2	37·7	17·9	36·6	32·4	30·6
1934	36·6	35·8	29·8	33·8	26·8	31·7	40·5	28·0	18·8	29·4	40·6	26·9
1935	36·3	35·0	27·9	33·3	25·7	31·1	43·6	30·7	14·7	29·1	32·2	25·8
1936	34·6	35·3	32·8	33·5	25·2	31·0	40·5	30·5	16·6	31·0	40·4	27·5
1937	36·4	36·7	29·2	32·9	24·8	31·2	43·1	27·9	17·1	30·3	35·3	26·4
	Rates per cent. of those in 1930–32.											
1933	111	106	104	107	106	106	97	101	89	97	85	94
1934	105	101	105	102	105	102	84	75	94	78	107	82
1935	104	99	98	102	101	100	90	82	73	77	85	79
1936	99	100	115	102	99	100	84	82	83	82	107	84
1937	105	104	102	100	97	100	89	75	85	81	93	81

part to the social conditions of which the average number of persons per room is an index, and the excess of 12·8 in this rate over group (*d*) is indicative of the effect of these factors on infant mortality from causes other than congenital.

Table XVIII shows that for all causes in the first year of life the decline in mortality from 1911–15 to 1926–30 amounted to 41 per cent. in London, 37 per cent. in county boroughs, 40 per cent. in the small towns and 34 per cent. in the rural districts. The 1937 rates showed a further improvement on 1926–30 rates amounting to 16 per cent. in the county boroughs, 17 in the small towns and 15 per cent. in the rural districts, Greater London being excluded in each case from the aggregates in this comparison.

Table XVIII.—Infant Mortality at Various Stages of Infancy in different Classes of Area compared with that in 1911–15 and 1926–30.

	Under 4 Weeks.				4 Weeks to 3 Months.				3–6 Months.			
Mortality (per 1,000 Live Births) compared with 1911–15 taken as 1,000.												
	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911–15	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916–20	949	943	940	971	834	810	790	834	793	739	691	726
1921–25	800	855	862	871	574	640	627	672	605	604	550	577
1926–30	728	812	823	841	505	548	507	582	539	516	430	480
Mortality (per 1,000 Live Births) compared with 1926–30 taken as 1,000.												
	Greater London.	Outside Greater London.			Greater London.	Outside Greater London.			Greater London.	Outside Greater London.		
		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.
1926–30	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1931–35	1,010	985	981	988	984	916	881	893	964	877	855	865
1931	1,017	981	989	1,010	1,075	993	1,003	937	1,037	980	946	910
1932	1,028	988	990	984	1,025	1,011	963	1,004	1,017	930	925	983
1933	1,041	1,007	1,003	1,016	869	938	906	927	891	956	905	854
1934	980	983	981	997	1,030	787	710	813	982	716	734	808
1935	982	969	944	928	916	845	827	768	886	794	768	761
1936	974	955	918	972	953	811	817	906	979	823	819	870
1937	940	934	942	930	1,002	852	811	828	1,023	867	772	765

	6–9 Months.				9–12 Months.				Total under 1 Year.			
Mortality (per 1,000 Live Births) compared with 1911–15 taken as 1,000.												
	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.	London Admin. County.	County Boroughs.	Other Urban Districts.	Rural Districts.
1911–15	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916–20	735	729	685	739	738	732	701	736	833	818	800	851
1921–25	578	604	568	583	592	643	573	602	655	700	683	721
1926–30	546	517	463	506	529	550	478	535	592	626	598	659
Mortality (per 1,000 Live Births) compared with 1926–30 taken as 1,000.												
	Greater London.	Outside Greater London.			Greater London.	Outside Greater London.			Greater London.	Outside Greater London.		
		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.		County Boroughs.	Other Urban Districts.	Rural Districts.
1926–30	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1931–35	828	834	764	822	762	761	735	796	945	911	899	925
1931	902	992	917	973	817	936	925	908	991	978	971	974
1932	915	897	824	925	937	791	795	910	1,000	947	938	974
1933	759	884	821	829	691	832	789	829	910	951	932	948
1934	878	702	615	719	855	644	591	715	960	833	825	893
1935	678	686	640	634	506	595	575	591	859	841	830	824
1936	960	730	614	646	792	611	593	674	948	841	821	890
1937	806	739	670	658	589	538	561	704	904	837	829	847

Table VIII on page 21 gives in column 9 the infant mortality rate in 1937 of each of 152 great towns, grouped according to their populations. These comprise the London Metropolitan Boroughs, all the County Boroughs and 41 other towns of more than 50,000 population in 1931. The aggregate rates per 1,000 births for the groups of towns, with additional separation of the northern and southern towns of each size, are given below :—

	Under 50 thousand population.	50 to 100 thousand population.	100 to 250 thousand population.	250 thousand or more population.
Greater London :				
Metropolitan boroughs	—	58	58	65
Outer ring towns ..	—	45	54	62†
County boroughs outside Greater London :				
All regions	50	59	66*	69
Northern region ..	59‡	64	76	75
South East, East or South West regions..	30§	46	48	44‖
Other great towns outside Greater London :				
All regions	—	51	*	—
Northern region ..	—	63	—	—
South East, East or South West regions	—	41	—	—

* Rhondda U.D. is included with the county boroughs.

† West Ham only. ‡ Chester only. § Canterbury only. ‖ Portsmouth only.

The increase of infant mortality rate with increasing size of town (as measured by population) within the same geographical area was more apparent in 1937 than the preceding year, for which a similar analysis was made on page 29 of the Review for 1936. County boroughs with 50 to 100 thousand population compare unfavourably with the other towns of similar population and in the same region, the disadvantage being much less, however, than was noticed in 1936. The county boroughs are for the most part the industrial towns which grew up during the 19th century, and their density of population, whether measured per acre or per room, is considerably greater in most instances than in the other towns.

For each individual town column 10 of Table VIII shows the difference between the infant mortality rate and that of the group in which the town is classed, and column 11 gives the standard errors of the rates for each town and each group. Where the difference amounts to twice its standard error the rate is designated as " high " or " low " in column 12 (see page 20). On this basis the metropolitan boroughs with high infant mortalities in 1937 were Kensington (83) and Lambeth (69) and those with low rates were Lewisham (47), Deptford (45), Hackney (43), Woolwich (40) and Stoke Newington (37). The outer ring towns with high rates were Wimbledon (67) and Willesden (64), whilst Ealing (46), Hendon (45),

Ilford (42), Harrow (36) and Twickenham (33) returned low rates. Newcastle-on-Tyne (91), Liverpool (82), Stoke (81), Nottingham (80), Kingston-upon-Hull (77) and Manchester (76) among the largest county boroughs, Middlesbrough (91), St. Helens (88), Sunderland (85), Salford (84), South Shields (80) and Birkenhead (78) in the intermediate group and Wigan (92), Warrington (82), Dudley (80), Merthyr Tydfil (79) and Bootle (77) amongst the county boroughs of under 100,000 population returned high rates. The lowest county borough infant mortalities were recorded by Canterbury (30), Eastbourne (31), Ipswich (32) and Oxford (36). Amongst the other towns Stockton-on-Tees (71) and Newcastle-under-Lyme (70) showed significant excess over towns of their class and Watford (29) had the lowest rate in the table.

If it is desired to make comparisons with the national rate of 57·6 instead of with the group rates, any difference from this figure amounting to twice the standard error in column 11 may be regarded as statistically significant, but it must be remembered that the national rate comprises also the rural areas and small towns.

Distribution of the Fall in Mortality at Various Stages of Infancy.—The reduction of mortality at various stages of infancy in different classes of area is outlined for the period during which the necessary detail of tabulation is available in Table XVIII.

In that table the comparison with 1911–15 is shown up to 1926–30 on the basis of the division previously used, that is to say, the aggregates referred to, other than the Administrative County of London, include in each instance some districts comprising London's outer ring, but from 1926–30 onwards the new density summary is used. It was pointed out in the Review for 1931 (p. 10) that the effect of the change on infant mortality rates is only of importance for the " other urban districts," the new aggregate having rates higher than the old, in 1931, by 5 per cent. for the first 4 weeks of life, 3 per cent. at 1–6 months, 8 per cent. at 6–9 months, 7 per cent. at 9–12 months and 5 per cent. for the first year as a whole. This effect, however, is eliminated in Table XIII by the change of datum line at 1926–30.

The percentage improvement in 1937 compared with 1926–30 rates is shown below to increase progressively for the most part outside Greater London throughout the first year of life. At ages 1–6 months Greater London mortality was higher than in the preceding two years and at 3–6 months it was the highest since 1931.

	Under 4 weeks.	4–13 weeks.	3–6 months.	6–9 months.	9–12 months.
	—	—	—	—	—
Greater London	— 6	0	+ 2	— 19	— 41
County Boroughs ..	— 7	— 15	— 13	— 26	— 46
Other Urban Districts ..	— 6	— 19	— 23	— 33	— 44
Rural Districts	— 7	— 17	— 23	— 34	— 30

The analysis of infant deaths by detail of age, initiated in 1905 with distinction of registration counties mainly urban and mainly rural in character, and expanded in 1917 and again in 1931, is given for each region and class of area in Table 13. Distinctions of sex and legitimacy are shown only for England and Wales as a whole, but are available for each of the populations dealt with. Some of the facts and rates applying to the illegitimate will be found in Table 14. The rates per 1,000 live births appear in Table XIX.

The chance of dying within half an hour of birth ranged from 1·3 per 1,000 in the East to 1·9 in Midland II. This measure is very dependent upon accuracy of certification, which in turn may be correlated with the frequency of the presence of a medical attendant at the birth. When the mortality within the first day as a whole is examined, Wales returned in each year from 1927 to 1936 the highest rate of any of the large regions, but in 1937 the Midlands gave the highest rate, followed by the North and then by Wales. For the combined mortality from the second to the seventh day Wales II again showed the highest rate, whilst Greater London gave the lowest ratio. North I gave the highest rates in the 2nd and 3rd weeks and from 1 to 9 months of age, and North II and IV at 9–12 months. The South-West or the South-East outside Greater London gave the lowest rates from the 4th week onwards.

Urban mortality excess is not, as a rule, present from birth, but tends to increase throughout the later months of infancy. In 1937, however, the divergence between the county boroughs and rural districts increased from 8 per cent. of the rate for England and Wales at 0–4 weeks to 42 at 1–3 months and 96 at 3–6 months, then falling to 90 per cent. at 6–9 months, and 37 per cent. at 9–12 months.

Causes of Infant Mortality.—The causes of infant mortality are set forth in Tables 11–15, which compare the records of 1937 with those of previous years, and show the incidence of mortality from each cause upon infants distinguished by sex, age, legitimacy, class of area, and section of the country. From these tables have been prepared the analysis of mortality during the first half-hour of life in 1937 in Table XX and the comparisons in Table XXI between the mortality from the chief causes distinguished at various ages in 1937 and 1932–36, and from all causes in 1937 and 1936.

From Table XX it is found that the death rates in the first half hour from congenital malformations, debility, prematurity and violence and lack of care are above the rates for 1936, whilst for injury at birth, convulsions and atelectasis they are below. The mean rates in 1931–35 from violence and lack of care were 72 per million live births for the legitimate and 6,315 for the illegitimate, in 1936 they were 59 and 5,383 respectively and in 1937, 84 and 5,525, Of the 140 deaths of illegitimate infants from these causes in 1937, 81 or 58 per cent., relate to abandoned infants of unknown parentage.

Table XIX.—Infant Mortality at Various Ages, 1937.

Rates per 1,000 Live Births.

		Total under one Year.	Under 30 Minutes.	30 Minutes and under 1 Day.	Total under 1 Day.	Days.						1 Day and under 1 Week.	Weeks.				Total under 4 Weeks.	4 Weeks to 3 Months.	Months.		
						1	2	3	4	5	6		0	1	2	3			3–6	6–9	9–12
England and Wales.																					
All Infants ..	M.	64·7	1·7	10·2	11·8	3·6	3·3	2·5	1·3	1·0	0·9	12·5	24·4	3·7	2·8	2·0	32·8	11·0	9·4	6·6	4·8
	F.	50·2	1·6	8·1	9·7	3·2	2·5	1·6	1·0	0·8	0·6	9·8	19·5	3·3	2·2	1·5	26·5	7·6	7·0	5·2	3·8
	P.	57·6	1·6	9·2	10·8	3·4	2·9	2·1	1·2	0·9	0·7	11·2	22·0	3·5	2·5	1·8	29·8	9·4	8·3	5·9	4·3
Legitimate ..	M.	63·3	1·4	10·0	11·4	3·6	3·3	2·5	1·3	1·0	0·8	12·5	23·9	3·6	2·7	2·0	32·2	10·6	9·1	6·6	4·8
	F.	48·9	1·3	8·0	9·3	3·2	2·5	1·6	1·0	0·8	0·6	9·7	19·0	3·2	2·2	1·5	25·8	7·3	6·8	5·1	3·8
	P.	56·3	1·3	9·0	10·4	3·4	2·9	2·0	1·2	0·9	0·7	11·1	21·5	3·4	2·5	1·7	29·1	9·0	8·0	5·9	4·3
Illegitimate ..	M.	95·9	7·9	13·2	21·0	4·5	4·4	2·4	1·1	0·9	1·0	14·4	35·4	4·7	4·1	2·8	46·9	20·9	16·8	7·3	4·7
	F.	79·8	9·6	11·1	20·7	5·0	2·5	2·0	1·0	1·0	0·7	12·1	32·8	4·4	2·8	2·8	42·8	14·5	13·0	5·6	3·8
	P	88·1	8·7	12·2	20·9	4·7	3·5	2·2	1·1	0·9	0·8	13·3	34·2	4·5	3·4	2·8	44·9	17·4	15·0	6·5	4·3
South-East		49·7	1·6	7·6	9·1	3·0	2·2	1·6	0·9	0·8	0·6	9·0	18·2	2·6	1·9	1·4	24·1	8·5	8·1	5·3	3·6
Greater London ..		53·9	1·5	7·3	8·9	2·9	2·1	1·5	0·8	0·8	0·6	8·7	17·6	2·6	2·0	1·5	23·7	9·7	10·0	6·4	4·1
Remainder of South-East		43·3	1·6	7·9	9·6	3·0	2·3	1·8	1·1	0·7	0·6	9·5	19·1	2·6	1·8	1·2	24·7	6·8	5·4	3·7	2·7
North		67·7	1·7	10·1	11·8	3·9	3·6	2·5	1·4	1·0	0·8	13·1	24·9	4·2	3·1	2·2	34·3	11·0	9·9	7·2	5·2
North I		74·1	1·5	9·7	11·2	4·1	3·6	2·4	1·2	0·7	1·0	13·0	24·2	5·6	4·6	2·1	36·5	13·0	11·6	7·9	5·1
„ II		66·5	1·6	10·2	11·8	3·7	3·2	2·4	1·5	0·8	0·7	12·4	24·2	3·7	2·8	2·0	32·8	12·6	9·1	6·7	5·4
„ III		60·2	1·8	10·1	11·9	4·4	3·7	2·6	1·5	1·1	0·5	13·7	25·6	3·5	2·4	1·7	33·3	9·1	7·4	5·7	4·8
„ IV		69·6	1·8	10·2	12·0	3·6	3·6	2·5	1·3	1·1	0·8	12·9	24·9	4·1	2·9	2·6	34·4	11·0	10·9	7·8	5·4
Midland		57·3	1·8	10·1	11·9	3·3	2·7	2·1	1·2	0·9	0·9	11·1	23·0	3·7	2·5	1·8	31·0	8·6	7·4	5·7	4·6
Midland I		57·2	1·7	10·3	12·1	3·6	2·7	2·0	1·1	0·9	0·8	11·1	23·2	3·5	2·5	1·7	30·8	8·6	7·4	5·7	4·6
„ II		57·6	1·9	9·7	11·6	2·7	2·8	2·3	1·2	0·9	1·1	11·1	22·7	4·0	2·5	2·0	31·3	8·7	7·6	5·7	4·4
East		48·6	1·3	9·2	10·4	2·8	2·8	1·9	1·4	0·8	0·7	10·5	20·9	3·2	2·1	1·6	27·7	7·6	5·2	4·5	3·5
South-West		46·1	1·7	9·1	10·8	3·4	2·9	1·9	1·3	0·8	0·6	10·9	21·7	2·9	2·2	1·4	28·2	6·8	4·1	3·3	3·7
Wales		62·5	1·6	10·2	11·7	4·2	4·1	2·6	1·5	0·8	0·9	14·0	25·7	4·5	2·8	1·9	34·9	10·2	7·6	5·7	4·2
Wales I		63·2	1·5	10·2	11·7	4·5	4·0	2·2	1·2	0·7	0·9	13·6	25·3	4·6	2·7	1·9	34·5	10·2	8·3	5·8	4·4
„ II		60·6	1·6	10·1	11·7	3·5	4·4	3·7	2·0	0·9	0·7	15·2	26·9	4·2	3·1	1·7	35·8	10·2	5·6	5·4	3·7
County Boroughs* ..		65·9	1·8	9·9	11·7	3·6	3·0	2·1	1·2	0·8	0·8	11·6	23·3	3·7	2·8	2·2	32·1	10·9	10·4	7·4	5·2
Other Urban Districts* ..		55·4	1·5	9·6	11·1	3·6	3·4	2·4	1·4	0·9	0·8	12·4	23·5	3·8	2·5	1·6	31·4	8·4	6·6	5·1	3·9
Rural Districts*		50·3	1·8	9·2	11·0	3·5	2·8	2·1	1·2	1·0	0·7	11·3	22·3	3·5	2·3	1·5	29·6	7·7	5·3	3·9	3·8

* Excluding Greater London.

Table XX.—Mortality of the first 30 Minutes of Life, 1937.

International List Numbers.	Cause of Death.	All Infants.	Under 30 Minutes.					
			Legitimate.			Illegitimate.		
			Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.
		Deaths.						
86	Convulsions	—	—	—	—	—	—	—
157	Congenital malformations	97	40	49	89	3	5	8
158	Congenital debility	41	14	24	38	2	1	3
159	Premature birth	355	179	148	327	16	12	28
160	Injury at birth	165	85	60	145	10	10	20
161 (*a*)	Atelectasis	124	62	56	118	4	2	6
161 (*b* & *c*)	Other diseases peculiar to early infancy	11	6	2	8	3	—	3
172–175	Homicide	22	—	—	—	14	8	22
182	Accidental suffocation	1	—	—	—	1	—	1
194 : 1	Lack of care	145	23	26	49	37	59	96
	Other forms of violence	21	—	—	—	7	14	21
	Violence and lack of care	*189*	*23*	*26*	*49*	*59*	*81*	*140*
	Other Causes	22	8	1	9	6	7	13
	All Causes	1,004	417	366	783	103	118	221
		Mortality per Million Live Births.						
86	Convulsions	—	—	—	—	—	—	—
157	Congenital malformations	159	133	172	152	229	408	316
158	Congenital debility	67	47	84	65	153	82	118
159	Premature birth	581	596	520	559	1,224	978	1,105
160	Injury at birth	270	283	211	248	765	815	789
161 (*a*)	Atelectasis	203	206	197	202	306	163	237
161 (*b* & *c*)	Other diseases peculiar to early infancy	18	20	7	14	229	—	118
172–175	Homicide	36	—	—	—	1,071	652	868
182	Accidental suffocation	2	—	—	—	76	—	39
194 : 1	Lack of care	237	77	91	84	2830	4,809	3,788
	Other forms of violence	34	—	—	—	535	1,141	829
	Violence and lack of care	*310*	*77*	*91*	*84*	*4,513*	*6,602*	*5,525*
	Other causes	36	27	4	15	459	571	513
	All Causes	1,644	1,387	1,286	1,338	7,879	9,618	8,721
		Percentage of Total under 24 Hours.						
86	Convulsions	—	—	—	—	—	—	—
157	Congenital malformations	20	18	21	20	23	42	32
158	Congenital debility	17	11	26	17	25	20	23
159	Premature birth	8	8	8	8	11	11	11
160	Injury at birth	28	25	28	26	63	83	71
161 (*a*)	Atelectasis	19	18	21	19	27	14	21
161 (*b* & *c*)	Other diseases peculiar to early infancy	18	19	8	14	100	—	100
172–175	Homicide	92	—	—	—	93	89	92
182	Accidental suffocation	17	—	—	—	50	—	50
194 : 1	Lack of care	86	88	84	86	84	88	86
	Other forms of violence	78	—	—	—	64	93	81
	Violence and lack of care	*84*	*79*	*79*	*79*	*82*	*89*	*86*
	Other causes	39	32	6	21	100	70	81
	All Causes	15	12	14	13	37	46	42

Table XXI shows that there was an appreciable decline in infant mortality in 1937 compared with the average of the preceding 5 years for measles, whooping cough, tuberculosis, convulsions, congenital debility and icterus.

The rates for measles, syphilis, convulsions, congenital debility, hernia and intestinal obstruction and inflammation of the stomach

established new low records in 1937, whilst that for atelectasis was the highest recorded in Table 12. The death rate attributed to injury at birth which increased continuously from 1923 to 1936 registered a slight fall in 1937.

Table XXI.—Comparison of Infant Mortality Rates (per 100,000 Live Births) in 1937 with those of immediately preceding years.

—	Under 4 Weeks.	4 Weeks to 3 Months.	3–6 Months.	6–9 Months.	9–12 Months.	Under 1 Year.	Under 4 Weeks.	4 Weeks to 3 Months	3–6 Months.	6–9 Months.	9–12 Months.	Under 1 Year.
	Increase or Decrease from Various Causes as compared with 1932-36.						Percentage Increase or Decrease as compared with 1932-36.					
Measles (7)	—	—	− 3	−15	− 32	− 49	—	—	−43	−54	−65	−56
Whooping cough (9)	− 3	− 8	− 6	− 7	− 10	− 33	*	−21	−14	−16	−22	−19
Influenza (11)	—	+ 1	+ 5	+ 2	+ 6	+ 12	—	+10	+45	+17	−55	+24
Tuberculosis, all forms (23–32)	+ 1	− 1	− 3	− 4	− 3	− 10	*	−20	−16	−17	−12	−14
Convulsions (86)	−36	− 2	− 4	− 4	− 2	− 49	−38	− 7	−16	−24	−18	−28
Bronchitis and pneumonia (106–109)	− 1	+ 5	+18	+ 1	− 31	− 8	− 1	+ 2	+ 6	—	−14	− 1
Diarrhœa and enteritis (119)	−11	− 1	−11	− 1	− 16	− 40	−20	− 1	− 6	− 1	−27	− 7
Developmental and wasting diseases (157–159, 161 *a*, *b*)	− 67	− 5	− 5	− 4	− 1	− 83	− 3	− 1	− 5	−12	− 6	− 3
Congenital defects (malformations and atelectasis) (157, 161a)	*+19*	*+13*	—	*− 1*	—	*+ 31*	*+ 3*	*+ 9*	—	*− 4*	—	*+ 4*
Congenital debility and icterus (158, 161b)	*−28*	*− 7*	*− 6*	*− 2*	*− 2*	*− 45*	*−14*	*−10*	*−18*	*−25*	*	*−14*
Premature birth (159)	*−59*	*−12*	*+ 1*	—	—	*− 70*	*− 4*	*− 9*	*+ 8*	—	—	*− 4*
Injury at birth (160)	+11	—	—	—	—	+ 12	+ 5	—	—	—	—	+ 5
Suffocation—in bed or not stated how (182 part)	− 4	+ 1	− 1	− 1	+ 1	− 3	−29	+ 8	+ 9	*	*	− 7
Other causes	−26	−13	+ 6	− 1	− 10	− 43	−12	−12	+ 4	− 1	−11	− 6
All Causes	−136	−23	− 2	−34	− 98	−294	− 4	− 2	—	− 5	−18	− 5
	Increase or Decrease of Mortality in 1937 as compared with 1936.						Increase or Decrease of Mortality in 1937 per cent. of that in 1936.					
All Causes	−40	+11	—	− 7	− 55	− 92	− 1	+ 1	—	− 1	−11	− 2

Note.—The percentages in this Table being based on rates per 100,000 live births may differ on this account from those derivable from the rates in Table VIII.

* Numbers too small to provide significant comparison.

Table XXII contrasts the mortality of male with that of female, and of legitimate with that of illegitimate, infants. The sex ratio of mortality was 129, a maximal ratio of 133 having been reached in 1930, followed by a decline in each year to 127 in 1934 and a rise to 131 in 1936. This ratio ranged from 87 for whooping cough to 147 for convulsions. The percentage ratio of illegitimate to legitimate infant mortality was, as usual, highest for syphilis and diarrhœa.

Table XXIII, which is derived from Table 15, furnishes an analysis by cause and region of the total mortality under one year of age in 1931–35, 1936 and 1937.

Apart from the usual large annual variations in regional mortality from measles and whooping cough, and fluctuations due to the small

Table XXII.—Infant Mortality by Cause, Sex and Legitimacy, 1937.

		Deaths per 1,000 Live Births.						Mortality per cent.				
		All Infants.		Legitimate Infants.		Illegitimate Infants.		Male of Female Infants.			Illegitimate of Legitimate Infants.	
		Male.	Female.	Male.	Female.	Male.	Female.	All Infants.	Legitimate.	Illegitimate.	Male.	Female.
All Causes.	Under four weeks ..	32·79	26·55	32·18	25·85	46·89	42·79	124	124	110	146	166
	4 weeks–3 months ..	11·05	7·60	10·65	7·30	20·20	14·51	145	146	139	190	199
	3–6 months.. ..	9·43	7·03	9·11	6·77	16·75	13·04	134	135	128	184	193
	6–9 „	6·59	5·16	6·56	5·14	7·27	5·62	128	128	129	111	109
	9–12 „	4·81	3·82	4·81	3·82	4·74	3·83	126	126	124	99	100
	Total under 1 year	64·67	50·16	63·31	48·88	95·85	79·79	129	130	120	151	163
All Ages under one Year.	Measles (7)	0·39	0·38	0·39	0·39	0·38	0·16	103	100	238	97	41
	Whooping cough (9)	1·31	1·51	1·31	1·53	1·30	1·06	87	86	123	99	69
	Tuberculosis, all forms (23–32) ..	0·69	0·58	0·70	0·58	0·54	0·49	119	121	110	77	84
	Syphilis (34) ..	0·26	0·19	0·22	0·17	1·22	0·65	137	129	188	555	382
	Convulsions (86) ..	1·53	1·04	1·50	1·01	2·29	1·79	147	149	128	153	177
	Bronchitis and pneumonia (106–109)..	13·02	9·23	12·87	9·16	16·53	10·92	141	141	151	128	119
	Diarrhœa and enteritis (119) ..	5·94	4·12	5·59	3·83	14·00	10·84	144	146	129	250	283
	Developmental and wasting diseases (157–159, 161*a* & *b*)	30·61	25·05	30·18	24·61	40·70	35·29	122	123	115	135	143
	Congenital defects (malformations and atelectasis) (157, 161a) ..	*8·92*	*7·30*	*8·92*	*7·30*	*8·87*	*7·33*	*122*	*122*	*121*	*99*	*100*
	Congenital debility, sclerema and icterus (158, 161b)	*3·25*	*2·29*	*3·15*	*2·23*	*5·66*	*3·59*	*142*	*141*	*158*	*180*	*161*
	Premature birth(159)	*18·44*	*15·46*	*18·10*	*15·08*	*26·16*	*24·37*	*119*	*120*	*107*	*145*	*162*
	Other causes ..	10·92	8·06	10·55	7·60	18·89	18·59	135	139	102	179	245
	All causes	64·67	50·16	63·31	48·88	95·85	79·79	129	130	120	151	163

number of deaths from tuberculosis and syphilis, this Table shows a regional distribution of the main causes of mortality similar to those of recent years. Greater London shows for 1937, as usual, a high diarrhœa rate and very low figures for convulsions and congenital debility; the North gives high syphilis and respiratory disease rates and Wales records, as usual, high rates for convulsions and congenital debility.

Pre-natal, Post-natal and Infantile Mortality in 1933–37 in Regions, County and Metropolitan Boroughs,—Table XXIV gives the stillbirth rates per 100,000 live births and the rates of mortality at different periods of the first year per 100,000 live births in the 5 years 1933–37 for each region, county borough and metropolitan borough, and in the right hand portion of the table the rates are expressed as percentages of the corresponding rate for England and Wales as a whole.

The region with the lowest infant mortality was the South-East excluding Greater London, with a rate of 44·25 per 1,000 live births, and in Diagram 3 the various rates for the other regions have been expressed in terms of the corresponding rate for this region with the

Table XXIII.—Comparison of Infant Mortality from the Principal Causes in Geographical Regions—Rates per 100,000 Live Births in 1931–35, 1936 and 1937 and per cent. of those for England and Wales in 1937.

—		Measles (7).	Whooping Cough (9).	Tuberculosis all forms (23–32).	Syphilis (34).	Convulsions (86).	Bronchitis and pneumonia (106–109).	Diarrhœa and enteritis (119).	Congenital malformations. (157)	Congenital debility (158).	Premature birth (159).	Injury at birth (160).	Other causes.	All Causes.
Rates per 100,000 Live births.														
ENGLAND AND WALES	1931–35	90	174	83	40	193	1,218	542	585	291	1,801	226	974	6,217
	1936	103	177	59	27	149	1,079	532	608	241	1,669	253	956	5,853
	1937	38	141	64	23	129	1,118	505	606	225	1,699	247	966	5,761
Greater London	1931–35	81	172	73	40	58	1,088	790	520	202	1,444	215	945	5,628
	1936	157	180	59	23	32	1,102	935	524	151	1,304	235	946	5,648
	1937	8	170	52	20	32	1,064	890	518	145	1,311	225	951	5,386
Remainder of South-East	1931–35	32	124	74	24	91	709	281	509	245	1,441	211	822	4,563
	1936	53	104	39	10	77	696	265	563	190	1,378	212	893	4,480
	1937	11	107	53	18	59	672	313	530	162	1,376	247	786	4,334
North	1931–35	135	199	96	50	273	1,584	625	623	360	2,043	239	1,097	7,324
	1936	148	184	72	38	215	1,292	565	640	296	1,923	286	1,042	6,701
	1937	56	158	66	30	205	1,451	510	675	278	1,973	265	1,102	6,769
North I	1931–35	157	221	122	66	410	1,798	756	610	432	2,149	218	1,100	8,039
North II	1931–35	121	195	114	39	283	1,456	545	619	336	1,998	232	979	6,917
North III	1931–35	100	167	87	49	227	1,410	494	603	279	1,978	236	1,116	6,746
North IV	1931–35	149	209	85	47	235	1,618	660	641	380	2,044	251	1,111	7,430
Midland	1931–35	85	176	82	42	169	1,210	508	600	273	1,966	232	939	6,282
	1936	50	199	58	25	146	1,116	427	660	244	1,784	261	932	5,902
	1937	52	107	85	19	113	1,071	417	639	203	1,812	249	963	5,730
Midland I	1931–35	85	173	80	44	137	1,217	556	598	253	1,972	251	969	6,335
Midland II	1931–35	84	181	86	36	234	1,196	414	603	313	1,954	195	883	6,179
East	1931–35	33	146	98	42	152	815	216	570	288	1,687	180	882	5,109
	1936	49	150	52	11	142	842	224	553	247	1,657	228	763	4,918
	1937	37	129	63	7	77	782	236	615	302	1,633	177	799	4,857
South-West	1931–35	36	147	64	25	149	724	214	620	258	1,636	238	822	4,933
	1936	43	137	54	14	108	746	238	656	238	1,482	220	826	4,762
	1937	15	127	54	25	83	638	163	609	207	1,600	272	818	4,611
Wales	1931–35	83	180	70	30	500	1,334	430	670	358	2,052	232	976	6,915
	1936	29	272	47	40	369	976	361	659	332	1,915	232	949	6,181
	1937	73	148	56	24	317	1,208	355	576	366	1,980	253	896	6,252
Wales I	1931–35	94	182	66	32	499	1,425	443	685	361	2,101	217	987	7,092
Wales II	1931–35	50	175	81	26	504	1,058	391	625	349	1,905	280	937	6,381
Rates per cent. of those for England and Wales, 1937.														
South-East		24	103	81	87	33	81	130	86	67	79	94	92	86
Greater London		21	121	81	87	25	95	176	85	64	77	91	98	93
Remainder		29	76	83	78	46	60	62	87	72	81	100	81	75
North		147	112	103	130	159	130	101	111	124	116	107	114	117
North I		155	126	130	174	246	158	148	103	137	120	91	105	129
North II		268	79	102	100	155	132	102	106	124	117	92	105	115
North III		97	77	100	143	126	110	74	102	113	111	101	105	105
North IV		147	133	94	113	143	129	97	121	124	117	121	125	121
Midland		137	76	133	83	88	96	83	105	90	107	101	100	99
Midland I		147	84	139	87	75	91	80	109	82	107	109	101	99
Midland II		121	60	122	70	113	105	88	98	107	106	83	96	100
East		97	91	98	30	60	70	47	101	134	96	72	83	84
South-West		39	90	84	109	64	57	32	100	92	94	110	85	80
Wales		192	105	88	104	246	108	70	95	163	117	102	93	109
Wales I		239	96	108	65	229	116	73	95	156	117	92	93	110
Wales II		53	130	31	222	291	85	62	94	181	114	132	94	105

Table XXIV.—Stillbirth and Infant Mortality rates at different periods of the First Year of Life in 1933–37 per 100,000 Live births and per cent. of the corresponding rate in England and Wales, for each Region, County Borough and Metropolitan Borough and in London and the Density Aggregates.

	Rates per 100,000 Live Births.								Per cent. of England and Wales.							
	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.
ENGLAND AND WALES ..	4,195	1,084	1,145	845	930	810	1,088	5,902	100	100	100	100	100	100	100	100
Greater London	3,329	947	878	651	923	929	1,130	5,458	79	87	77	77	99	115	104	92
Rest of S.E. ..	3,550	951	951	648	678	529	668	4,425	85	88	83	77	73	65	61	75
North I ..	4,369	1,176	1,338	1,341	1,141	1,147	1,476	7,619	104	108	117	159	123	142	136	129
North II ..	4,420	1,102	1,243	929	1,106	898	1,278	6,556	105	102	109	110	119	111	117	111
North III ..	4,784	1,159	1,356	883	950	814	1,129	6,291	114	107	118	104	102	100	104	107
North IV ..	4,865	1,201	1,289	991	1,118	994	1,405	6,998	116	111	113	117	120	123	129	119
Midland I ..	4,228	1,173	1,164	861	921	761	1,106	5,985	101	108	102	102	99	94	102	101
Midland II ..	4,235	1,101	1,220	887	920	736	1,014	5,879	101	102	107	105	99	91	93	100
East	3,890	1,003	1,089	778	700	518	782	4,870	93	93	95	92	75	64	72	83
South West ..	4,118	1,005	1,134	720	707	475	674	4,715	98	93	99	85	76	59	62	80
Wales I ..	5,736	1,249	1,396	1,008	1,032	819	1,139	6,643	137	115	122	119	111	101	105	113
Wales II ..	5,570	1,158	1,540	887	1,002	725	895	6,208	133	107	134	105	108	90	82	105
London A.C...	3,331	1,006	841	601	1,080	1,205	1,478	6,211	79	93	73	71	116	149	136	105
,, Outer ring	3,316	894	911	695	780	679	814	4,772	79	82	80	82	84	84	75	81
*County boroughs	4,390	1,158	1,210	960	1,086	991	1,364	6,768	105	107	106	114	117	122	125	115
*Other urban districts ..	4,518	1,102	1,218	870	844	678	941	5,652	108	102	106	103	91	84	86	96
*Rural districts	4,278	1,072	1,202	811	792	566	787	5,230	102	99	105	96	85	70	72	89
Met. Boroughs :																
Battersea ..	2,983	1,149	908	676	825	1,121	1,418	6,097	71	106	79	80	89	138	130	103
Bermondsey	2,995	958	812	812	918	1,211	1,571	6,281	71	88	71	96	99	150	144	106
Bethnal Green	3,089	862	776	632	1,206	1,537	1,824	6,837	74	80	68	75	130	190	168	116
Camberwell..	3,122	855	754	559	1,250	1,125	1,351	5,894	74	79	66	66	134	139	124	100
Chelsea ..	3,171	1,068	841	356	1,132	1,391	1,521	6,310	76	99	73	42	122	172	140	107
Deptford ..	3,440	992	596	662	953	900	1,284	5,386	82	92	52	78	102	111	118	91
Finsbury ..	3,148	1,006	546	437	962	1,442	1,858	6,251	75	93	48	52	103	178	171	106
Fulham ..	3,040	913	1,024	552	1,064	1,144	1,224	5,920	72	84	89	65	114	141	113	100
Greenwich ..	3,257	1,170	825	555	915	1,350	1,470	6,287	78	108	72	66	98	167	135	107
Hackney ..	3,407	822	714	532	1,165	774	1,225	5,232	81	76	62	63	125	96	113	89
Hammersmith	3,348	1,030	901	622	1,158	1,341	1,738	6,789	80	95	79	74	125	166	160	115
Hampstead..	3,556	1,274	740	555	658	802	1,233	5,261	85	118	65	66	71	99	113	89
Holborn ..	3,690	1,610	1,342	469	1,408	1,610	939	7,379	88	149	117	56	151	199	86	125
Islington ..	3,219	977	925	672	973	1,116	1,509	6,171	77	90	81	80	105	138	139	105
Kensington..	3,390	1,060	905	612	1,426	1,846	2,157	8,007	81	98	79	72	153	228	198	136
Lambeth	3,328	1,172	850	594	1,086	1,224	1,346	6,271	79	108	74	70	117	151	124	106
Lewisham ..	3,622	720	876	438	932	770	840	4,576	86	66	77	52	100	95	77	78
Paddington..	3,710	1,250	948	667	1,438	1,792	1,720	7,816	88	115	83	79	155	221	158	132
Poplar ..	3,126	1,000	709	463	1,009	963	1,763	5,908	75	92	62	55	108	119	162	100
St. Marylebone	3,560	1,066	793	567	1,111	1,360	1,519	6,417	85	98	69	67	119	168	140	109
St. Pancras..	3,584	1,010	904	521	1,222	1,434	1,466	6,557	85	93	79	62	131	177	135	111
Shoreditch ..	3,490	832	846	490	1,024	1,618	2,020	6,830	83	77	74	58	110	200	186	116
Southwark ..	3,351	1,004	724	532	1,048	1,406	1,894	6,609	80	93	63	63	113	174	174	112
Stepney ..	3,360	957	782	711	1,247	1,628	2,120	7,446	80	88	68	84	134	201	195	126
Stoke Newington ..	3,246	833	948	546	747	804	919	4,798	77	77	83	65	80	99	84	81
Wandsworth	3,382	918	1,043	752	955	955	1,105	5,729	81	85	91	89	103	118	102	97
Westminster	3,399	1,598	919	717	1,010	845	1,433	6,521	81	147	80	85	109	104	132	110
Woolwich ..	3,491	1,094	637	627	1,114	995	915	5,381	83	101	56	74	120	123	84	91

* Outside Greater London.

Table XXIV.—*contd.*

	Rates per 100,000 Live Births.								Per cent. of England and Wales.							
	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.
County Boro's. :																
Barnsley ..	4,950	857	1,412	984	1,000	1,048	1,396	6,698	118	79	123	116	108	129	128	113
Barrow - in - Furness ..	4,928	1,404	1,318	1,124	1,491	821	1,318	7,477	117	130	115	133	160	101	121	127
Bath ..	3,018	911	755	468	963	520	625	4,241	72	84	66	55	104	64	57	72
Birkenhead..	4,897	1,159	1,168	932	1,200	1,224	1,662	7,344	117	107	102	110	129	151	153	124
Birmingham	3,812	1,376	1,041	744	1,047	898	1,306	6,413	91	127	91	88	113	111	120	109
Blackburn ..	5,029	1,210	1,610	911	883	712	1,182	6,509	120	112	141	108	95	88	109	110
Blackpool ..	5,489	1,446	1,380	748	898	732	698	5,903	131	133	121	89	97	90	64	100
Bolton ..	5,870	1,042	1,390	923	978	768	1,198	6,300	140	96	121	109	105	95	110	107
Bootle ..	4,382	1,368	1,284	860	1,416	1,260	1,840	8,029	104	126	112	102	152	156	169	136
Bournemouth	3,719	956	1,123	805	729	379	622	4,615	89	88	98	95	78	47	57	78
Bradford ..	4,929	1,456	1,284	875	1,148	1,056	1,334	7,152	117	134	112	104	123	130	123	121
Brighton ..	3,715	1,022	908	702	991	784	1,022	5,428	89	94	79	83	107	97	94	92
Bristol ..	4,278	909	1,030	882	685	467	823	4,795	102	84	90	104	74	58	76	81
Burnley ..	5,520	1,574	1,411	1,067	869	869	1,194	6,983	132	145	123	126	93	107	110	118
Burton - on - Trent ..	4,102	996	1,406	909	967	615	1,055	5,949	98	92	123	108	104	76	97	101
Bury ..	5,282	1,094	1,281	1,040	1,040	721	1,174	6,350	126	101	112	123	112	89	108	108
Canterbury..	2,953	891	891	279	557	613	725	3,956	70	82	78	33	60	76	67	67
Carlisle ..	4,455	1,462	1,554	975	975	998	1,206	7,170	106	135	136	115	105	123	111	121
Chester ..	4,312	1,022	1,342	1,310	990	735	1,086	6,485	103	94	117	155	106	91	100	110
Coventry ..	3,984	1,072	1,273	741	841	705	705	5,336	95	99	111	88	90	87	65	90
Croydon ..	3,305	1,010	756	645	837	663	862	4,772	79	93	66	76	90	82	79	81
Darlington ..	4,880	1,120	1,320	1,175	705	687	1,030	6,038	116	103	115	139	76	85	95	102
Derby ..	4,299	1,384	1,207	883	1,001	746	893	6,113	102	128	105	104	108	92	82	104
Dewsbury ..	6,027	1,220	1,636	1,220	857	831	857	6,622	144	113	143	144	92	103	79	112
Doncaster ..	5,031	661	1,321	913	933	563	1,146	5,538	120	61	115	108	100	70	105	94
Dudley ..	4,247	1,329	1,550	1,181	1,108	1,163	1,421	7,752	101	123	135	140	119	144	131	131
Eastbourne..	3,274	954	699	509	445	668	858	4,132	78	88	61	60	48	82	79	70
East Ham ..	3,355	731	823	792	875	566	916	4,702	80	67	72	94	94	70	84	80
Exeter ..	4,176	889	1,034	972	848	455	910	5,107	100	82	90	115	91	56	84	87
Gateshead ..	4,590	949	1,216	1,963	1,170	1,392	1,742	8,431	109	88	106	232	126	172	160	143
Gloucester ..	4,419	955	860	669	836	717	955	4,991	105	88	75	79	90	89	88	85
Gt.Yarmouth	3,900	711	1,159	606	896	580	710	4,662	93	66	101	72	96	72	65	79
Grimsby ..	4,159	1,094	961	1,010	730	827	1,460	6,080	99	101	84	120	78	102	134	103
Halifax ..	5,900	1,296	1,706	1,245	1,074	733	1,347	7,401	141	120	149	147	115	90	124	125
Hastings ..	3,454	1,212	791	527	712	395	896	4,535	82	112	69	62	77	49	82	77
Huddersfield	5,381	1,500	1,458	659	631	631	659	5,538	128	138	127	78	68	78	61	94
Ipswich ..	3,804	962	696	799	577	341	636	4,011	91	89	61	95	62	42	58	68
Hull.. ..	4,145	1,040	1,026	882	1,334	1,234	1,584	7,100	99	96	90	104	143	152	146	120
Leeds ..	4,541	1,147	1,352	855	1,183	1,020	1,388	6,945	108	106	118	101	127	126	128	118
Leicester ..	3,788	1,072	1,178	809	959	774	1,340	6,131	90	99	103	96	103	96	123	104
Lincoln ..	4,292	1,018	1,140	655	946	703	534	4,995	102	94	100	78	102	87	49	85
Liverpool ..	4,000	1,102	1,098	1,006	1,432	1,566	2,176	8,380	95	102	96	119	154	193	200	142
Manchester..	4,744	1,185	1,244	996	1,347	1,173	1,410	7,355	113	109	109	118	145	145	130	125
Middlesbrough	4,870	996	1,328	1,232	1,358	1,218	2,280	8,412	116	92	116	146	146	150	210	143
Newcastle-on-Tyne ..	4,028	1,140	1,170	1,849	1,277	1,495	1,598	8,529	96	105	102	219	137	185	147	145
Northampton	3,805	951	1,240	713	544	527	612	4,588	91	88	108	84	58	65	56	78
Norwich ..	3,273	1,095	967	664	850	629	1,025	5,230	78	101	84	79	91	78	94	89
Nottingham..	4,131	1,168	1,282	1,122	1,336	1,505	1,669	8,081	98	108	112	133	144	186	153	137
Oldham ..	5,872	1,248	1,486	1,070	1,129	678	1,320	6,930	140	115	130	127	121	84	121	117
Oxford ..	3,060	921	968	531	484	312	578	3,793	73	85	85	63	52	39	53	64
Plymouth ..	3,876	928	1,043	870	979	633	1,056	5,508	92	86	91	103	105	78	97	93
Portsmouth..	3,673	805	935	701	743	665	878	4,728	88	74	82	83	80	82	81	80
Preston ..	5,320	1,240	1,741	1,205	1,360	990	1,444	7,980	127	114	152	143	146	122	133	135
Reading ..	3,528	906	1,180	1,016	686	674	674	5,132	84	84	103	120	74	83	62	87
Rochdale ..	5,494	1,019	1,510	1,728	1,110	746	1,364	7,478	131	94	132	204	119	92	125	127
Rotherham..	4,603	1,043	1,308	894	993	795	1,440	6,474	110	96	114	106	107	98	132	110
St. Helens ..	5,287	1,479	1,359	1,309	1,129	1,219	1,878	8,352	126	136	119	155	121	150	173	142
Salford ..	5,358	1,428	1,320	1,100	1,453	1,302	1,832	8,435	128	132	115	130	156	161	168	143
Sheffield ..	4,333	1,086	1,232	834	772	719	1,059	5,701	103	100	108	99	83	89	97	97
Smethwick ..	3,691	887	1,208	967	1,016	854	919	5,851	88	82	106	114	109	105	84	99
Southampton	3,922	1,106	1,027	663	834	713	856	5,200	93	102	90	78	90	88	79	88
Southend-on-Sea ..	3,518	1,128	792	524	712	618	698	4,470	84	104	69	62	77	76	64	76
Southport ..	4,390	1,496	1,374	834	540	662	834	5,740	105	138	120	99	58	82	77	97
South Shields	4,120	1,206	1,373	1,321	1,436	1,342	1,810	8,487	98	111	120	156	154	166	166	144
Stockport ..	5,470	1,347	1,221	1,082	944	806	1,082	6,481	130	124	107	128	102	100	99	110
Stoke-on-Trent	5,481	1,487	1,492	1,038	1,188	1,236	1,777	8,219	131	137	130	123	128	153	163	139
Sunderland..	4,086	986	1,416	1,253	1,324	1,504	1,940	8,422	97	91	124	148	142	186	178	143

Table XXIV.—*contd.*

	Rates per 100,000 Live Births.								Per cent. of England and Wales.							
	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.	Stillbirths.	0–1 day.	1–7 days.	1–4 weeks.	4 weeks–3 months.	3–6 months.	6–12 months.	0–1 year.
Tynemouth..	4,300	708	1,140	1,071	1,123	1,503	1,503	7,049	102	65	100	127	121	186	138	119
Wakefield ..	4,924	1,439	1,349	810	1,057	742	1,192	6,590	117	133	118	96	114	92	110	112
Wallasey ..	4,081	1,040	1,381	729	884	605	962	5,602	97	96	121	86	95	75	88	95
Walsall ..	3,785	1,210	1,128	1,107	1,190	889	1,334	6,858	90	112	99	131	128	110	123	116
Warrington..	4,849	1,606	1,290	1,186	1,276	915	1,410	7,682	116	148	113	140	137	113	130	130
W. Bromwich	4,225	1,073	1,180	1,113	1,274	1,247	1,985	7,871	101	99	103	132	137	154	182	133
West Ham ..	3,401	877	821	727	1,004	1,084	1,642	6,156	81	81	72	86	108	134	151	104
W. Hartlepool	3,745	895	1,552	1,164	985	1,178	1,223	6,998	89	83	136	138	106	145	112	119
Wigan ..	5,692	1,504	1,392	1,364	1,406	1,307	1,996	8,969	136	139	122	161	151	161	183	152
Wolver-hampton	3,965	1,213	1,196	923	985	870	1,310	6,498	95	112	104	109	106	107	120	110
Worcester ..	4,227	1,167	1,322	856	856	415	960	5,575	101	108	115	101	92	51	88	94
York ..	4,312	860	1,289	637	874	756	1,038	5,453	103	79	113	75	94	93	95	92
Cardiff ..	4,992	1,452	1,247	825	1,030	855	1,206	6,615	119	134	109	98	111	106	111	112
Merthyr Tydfil	6,745	1,210	1,496	1,046	1,292	1,374	1,558	7,976	161	112	131	124	139	170	143	135
Newport(Mon)	4,310	1,321	1,424	1,022	1,152	1,010	1,412	7,340	103	122	124	121	124	125	130	124
Swansea ..	5,289	1,119	1,320	919	1,027	818	1,004	6,206	126	103	115	109	110	101	92	105

best record taken as 100. It is apparent that Greater London compared favourably with the surrounding counties of the South-East for pre-natal and post-natal mortality but after the first month of life the deleterious effects of urban residence on infant mortality become evident.

If Greater London is divided into a central area (consisting of the City, Holborn, Finsbury, Shoreditch, Bethnal Green, Stepney, Bermondsey and Southwark), a middle zone comprising the other metropolitan boroughs, and the outer ring of suburbs making up the rest of Greater London, the total pre-natal and post-natal mortality up to the end of the 4th week after birth tends to decrease slightly in passing from the South-East counties around London to

Table XXV.—Pre-natal, post-natal and infantile mortality in Central London and surrounding zones, 1931–37.

	Rates per 100,000 live births.				Rates in terms of surrounding counties taken as 100.			
	South East counties outside Greater London.	Outer ring of Greater London.	Middle zone of Met. Boroughs.	Central area of London	South East counties outside Greater London.	Outer ring of Greater London.	Middle zone of Met. Boroughs.	Central area of London.
Stillbirths ..	3,550	3,316	3,342	3,291	100	93	94	93
0–1 day ..	951	894	1,014	975	100	94	107	103
1–7 days ..	951	911	856	779	100	96	90	82
1–4 weeks ..	648	695	596	623	100	107	92	96
Total pre-natal and post-natal	*6,100*	*5,816*	*5,808*	*5,668*	*100*	*95*	*95*	*93*
4 weeks–3 months	678	780	1,072	1,113	100	115	158	164
3–6 months ..	529	679	1,137	1,489	100	128	215	281
6–12 months ..	668	814	1,380	1,889	100	122	207	283
Total 1–12 months	*1,875*	*2,273*	*3,589*	*4,491*	*100*	*121*	*191*	*240*

the centre, but after the 1st month a mortality gradient of the opposite kind appears which becomes very pronounced after the 3rd month of life.

This is apparent from Table XXV; for whereas each of the three areas of London had a total pre-natal and post-natal mortality rather below that of the counties surrounding London, mortality after one month increased rapidly towards the centre, being 2·8 times as great in the central area at 3–12 months as in the surrounding counties.

A similar effect of urbanization upon mortality after the first few weeks is seen when the county boroughs outside Greater London are compared with the smaller towns and rural districts, the urban rates expressed as percentages of the corresponding rural rates being as follows :—

	Still-births.	1st day.	1–7 days.	1–4 weeks.	4 weeks—3 months.	3–6 months.	6–12 months.
County boroughs	103	108	101	118	137	175	173
Other urban districts..	106	103	101	107	107	120	120
Rural districts	100	100	100	100	100	100	100

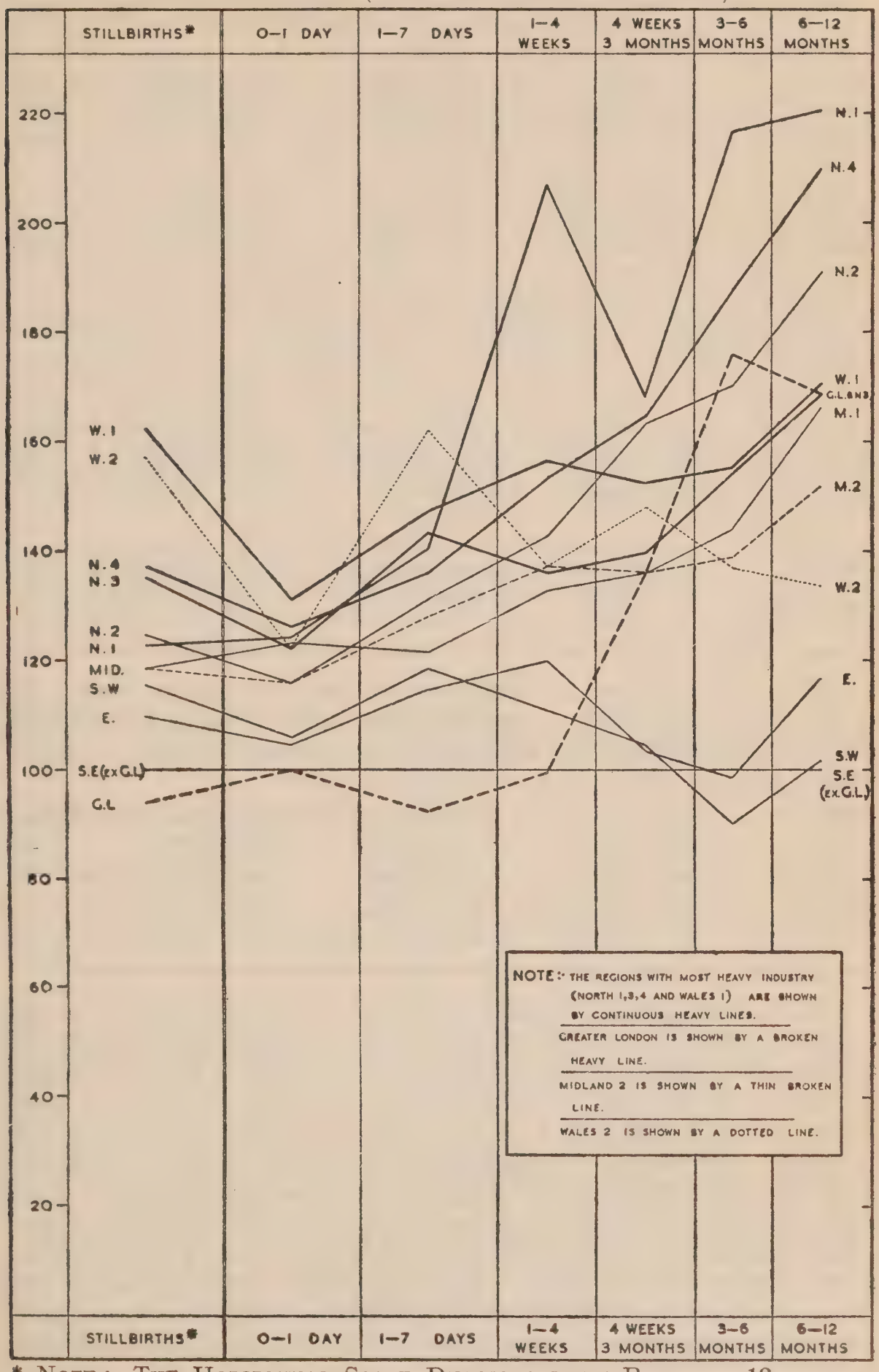
It is incredible that hereditary selection or differing standards of the mother's health, which have been shown to be highly correlated with infant mortality as a whole, should be more operative in later than in earlier infancy and it must be concluded, therefore, that the great bulk of the excess of urban over rural mortality is directly due to environmental and economic influences.

Diagram 3 shows that the northern regions had stillbirth ratios and first day mortality between 20 and 40 per cent. in excess of the South-East counties outside London, and at 1–7 days the excess was about 40 per cent. For the industrial regions of the North-East and North-West the excess rapidly mounted to over 100 per cent. at 6–12 months but in the West Riding of Yorkshire (North III) it reached a level no higher than in Greater London although in the rest of Yorkshire (North II.) the amount of excess increased steadily to about 90 per cent. The two Welsh regions showed a fairly constant excess around 50 per cent. after the first day until 6 months, and only at 6–12 months did industrial Wales present a pronounced excess over Wales II. The Midland regions showed an excess of about 20 per cent. in stillbirths and first day mortality, increasing to 50 or 60 per cent. by the end of the first year.

When the metropolitan boroughs are compared one with another the highest and lowest rates, *expressed in terms of those for London's outer ring taken as* 100, were as follows (rates based upon

DIAGRAM 3.

RATES OF PRE-NATAL AND INFANTILE MORTALITY (AT DIFFERENT PERIODS OF THE FIRST YEAR OF LIFE) IN 1933–37 IN EACH REGION OF ENGLAND AND WALES EXPRESSED AS PERCENTAGES OF THE CORRESPONDING RATE IN THE SOUTH EAST (EXCLUDING GREATER LONDON).



* NOTE: THE HORIZONTAL SCALE DIVISIONS FROM BIRTH TO 12 MONTHS ARE APPROXIMATELY PROPORTIONAL TO THE TOTAL DEATHS IN ENGLAND AND WALES AT THE AGES SPECIFIED, BUT THE BREADTH OF THE STILLBIRTH DIVISION, SHOULD, ON THE SAME SCALE, BE MULTIPLIED BY 3.

a total of live births which at the outer ring rates would give less than 50 deaths being distinguished by italics) :—

Still births		Under 1 day.		1–7 days.		1–4 weeks.	
			Highest.				
Paddington ..	112	*Holborn*	*180*	*Holborn*	*147*	Bermondsey ..	117
Holborn	111	*Westminster* ..	*179*	Wandsworth ..	114	Wandsworth ..	108
Lewisham ..	109	*Hampstead* ..	*142*	Fulham	112	*Westminster* ..	*103*
St. Pancras ..	108	Paddington ..	140	Paddington ..	104	Stepney	102
St. Marylebone ..	107	Lambeth	131	*Stoke Newington* ..	*104*	Battersea ..	97
			Lowest.				
Camberwell ..	94	Camberwell ..	96	Hackney ..	78	*Holborn*	*67*
Bethnal Green ..	93	*Stoke Newington* ..	*93*	Poplar	78	Poplar	67
Fulham	92	Shoreditch ..	93	Woolwich ..	70	Lewisham ..	63
Bermondsey ..	90	Hackney ..	92	Deptford	65	*Finsbury*	*63*
Battersea	90	Lewisham	81	*Finsbury*	*60*	*Chelsea*	*51*

4 weeks–3 months.		3–6 months.		6–12 months.		0–1 year.	
			Highest.				
Paddington ..	184	Kensington ..	272	Kensington ..	265	Kensington ..	168
Kensington ..	183	Paddington ..	264	Stepney	260	Paddington ..	164
Holborn	*181*	Stepney	240	Shoreditch ..	248	Stepney	156
Camberwell ..	160	*Shoreditch* ..	*238*	Southwark ..	233	Holborn	155
Stepney	160	*Holborn*	*237*	*Finsbury* ..	*228*	Bethnal Green ..	143
			Lowest.				
Bermondsey ..	118	*Westminster* ..	*124*	Wandsworth ..	136	Woolwich ..	113
Greenwich ..	117	*Stoke Newington* ..	*118*	*Holborn*	*115*	Hampstead ..	110
Battersea	106	*Hampstead* ..	*118*	*Stoke Newington* ..	*113*	Hackney ..	110
Stoke Newington ..	*96*	Hackney	114	Woolwich ..	112	Stoke Newington	101
Hampstead ..	*84*	Lewisham ..	113	Lewisham ..	103	Lewisham ..	96

The metropolitan boroughs have been arranged below in descending order of the proportions per 1,000 of their populations (in private families) who were living at housing densities of more than 2 persons per room at the Census of 1931.

Finsbury	294	St. Pancras ..	176	Greenwich ..	111	Hackney ..	96
Shoreditch ..	291	Holborn ..	171	Deptford	110	Westminster ..	71
Bethnal Green ..	236	Islington	160	Lambeth	106	Stoke Newington	66
Stepney	236	St. Marylebone ..	131	Fulham	105	Woolwich ..	57
Bermondsey ..	218	Kensington ..	126	Camberwell ..	104	Wandsworth ..	52
Southwark ..	216	Paddington ..	123	Chelsea	102	Hampstead ..	41
Poplar	201	Battersea ..	119	Hammersmith ..	102	Lewisham ..	41

When the order of ranking according to this index of the social environment is compared with the order of ranking according to the infant mortality at 6–12 months it is found that the 6 boroughs Finsbury, Shoreditch, Bethnal Green, Stepney, Southwark and Poplar occur in the first 7 at the head of each list, and that the 5 boroughs Lewisham, Wandsworth, Woolwich, Stoke Newington and Hackney occur in the last 7 at the foot of each list. The coefficient of correlation between the two series of figures is $\cdot 709 \pm \cdot 063$, indicating a high order of relationship between mortality at 6–12 months and the degree of overcrowding. At 3–6 months the correspondence between mortality and overcrowding is not so close, and it disappears as one approaches the birth period, the coefficient

of correlation in the case of neo-natal mortality at 0–4 weeks being $-\cdot214 \pm \cdot122$.

Noteworthy exceptions to the relationship with overcrowding are furnished by Kensington and Paddington, with rates of overcrowding below that of London County as a whole, but with infant mortality rates at ages 1–12 months amounting to 54·3 and 49·5 per 1,000 live births respectively, compared with 37·6 for London. For these high rates special causes outside the ordinary effects of overcrowding within houses, and all which that implies in social environment, must be looked for. Noteworthy also are the contrasts between the low mortality during the first week of life in Bethnal Green and Stepney (16·4 and 17·4 per 1,000 live births compared with 18·5 for London county) and their high mortality at 1–12 months (45·7 and 50·0 respectively compared with 37·6 for London), and the high mortality at 1 day to 4 weeks in Wandsworth (17·95 based on 346 deaths) contrasted with its low mortality during the remainder of the first year.

When the county boroughs are arranged in descending order of the mortality in 1933–37 those with highest and lowest rates, expressed in terms of the corresponding rate for all areas of England and Wales taken as 100, were as follows (rates based upon a total of live births which at the national rates would give less than 50 deaths being distinguished by italics) :—

Still births.		Under 1 day.		1–7 days.		1–4 weeks.	
			Highest.				
Merthyr Tydfil ..	161	Warrington ..	148	Preston	152	Gateshead ..	232
Dewsbury	144	Burnley	145	Halifax	149	Newcastle ..	219
Halifax	141	Wigan	139	*Dewsbury* ..	*143*	*Rochdale*	*204*
Oldham	140	Huddersfield ..	138	Blackburn ..	141	Wigan	161
Bolton	140	*Southport* ..	*138*	*Carlisle*	*136*	South Shields ..	156
			Lowest.				
Eastbourne ..	78	Portsmouth ..	74	*Hastings*	*69*	*Hastings*	*62*
Norwich	78	East Ham ..	67	*Bath*	*66*	Southend ..	62
Oxford	73	*Great Yarmouth* ..	*66*	Croydon	66	*Eastbourne* ..	*60*
Bath	72	Tynemouth ..	65	*Eastbourne* ..	*61*	*Bath*	*55*
Canterbury ..	70	Doncaster ..	61	Ipswich	61	*Canterbury* ..	*33*

4 weeks–3 months.		3–6 months.		6–12 months.		0–1 year.	
			Highest.				
Barrow	*160*	Liverpool ..	193	Middlesbrough ..	210	Wigan	152
Salford	156	Nottingham ..	186	Liverpool ..	200	Newcastle ..	145
Liverpool	154	Sunderland ..	186	Wigan	183	South Shields ..	144
South Shields ..	154	*Tynemouth* ..	*186*	West Bromwich ..	182	Salford	143
Bootle	152	Newcastle ..	185	Sunderland ..	178	Gateshead ..	143
			Lowest.				
Canterbury ..	*60*	*Worcester* ..	*51*	*Bath*	*57*	Bath	72
Northampton ..	58	*Hastings*	*49*	Bournemouth ..	57	Eastbourne ..	70
Southport	*58*	Bournemouth ..	47	Northampton ..	56	Ipswich	68
Oxford	52	Ipswich	42	Oxford	53	Canterbury ..	67
Eastbourne ..	*48*	Oxford	39	*Lincoln*	*49*	Oxford	64

The 10 county boroughs with highest infant mortality rates, per 1,000 live births, at ages under 1 year were Wigan 89·7, Newcastle-on-Tyne 85·3, South Shields 84·9, Salford 84·4, Gateshead 84·3, Sunderland 84·2, Middlesbrough 84·1, Liverpool 83·8,

St. Helens 83·5, and Stoke-on-Trent 82·2, the rates for these northern boroughs being more than double those for Ipswich (40·1), Canterbury (39·6) and Oxford (37·9), which gave the lowest rates. In Diagram 4 the stillbirth rates and mortality at successive periods of the first year in Wigan which had the highest rate amongst the county boroughs at 0–1 year, in the aggregate of 4 Tyneside towns with rates of 84 or 85 and in 5 large cities individually, are depicted in terms of the aggregate rates for Ipswich, Canterbury and Oxford. It is apparent that whilst the Tyneside group and Liverpool had stillbirth rates and first day mortality only about 20 per cent. in excess of the best towns, at 1–3 months their mortality was $2\frac{1}{2}$ times, and at 3–6 months over 4 times, the basic rate. Manchester returned a higher excess of stillbirth and first day mortality and a somewhat less pronounced excess after 3 months, whilst Wigan showed an excess of over 60 per cent. for pre-natal and post-natal mortality and over 200 per cent. for mortality after 3 months. Sheffield's excess ranged between 15 and 50 per cent. up to 3 months, reaching about 100 per cent. at 3–6 months, whilst Bristol's excess did not reach 45 per cent. at any period. Birmingham's mortality at 1–12 months was intermediate between that of Sheffield and Manchester.

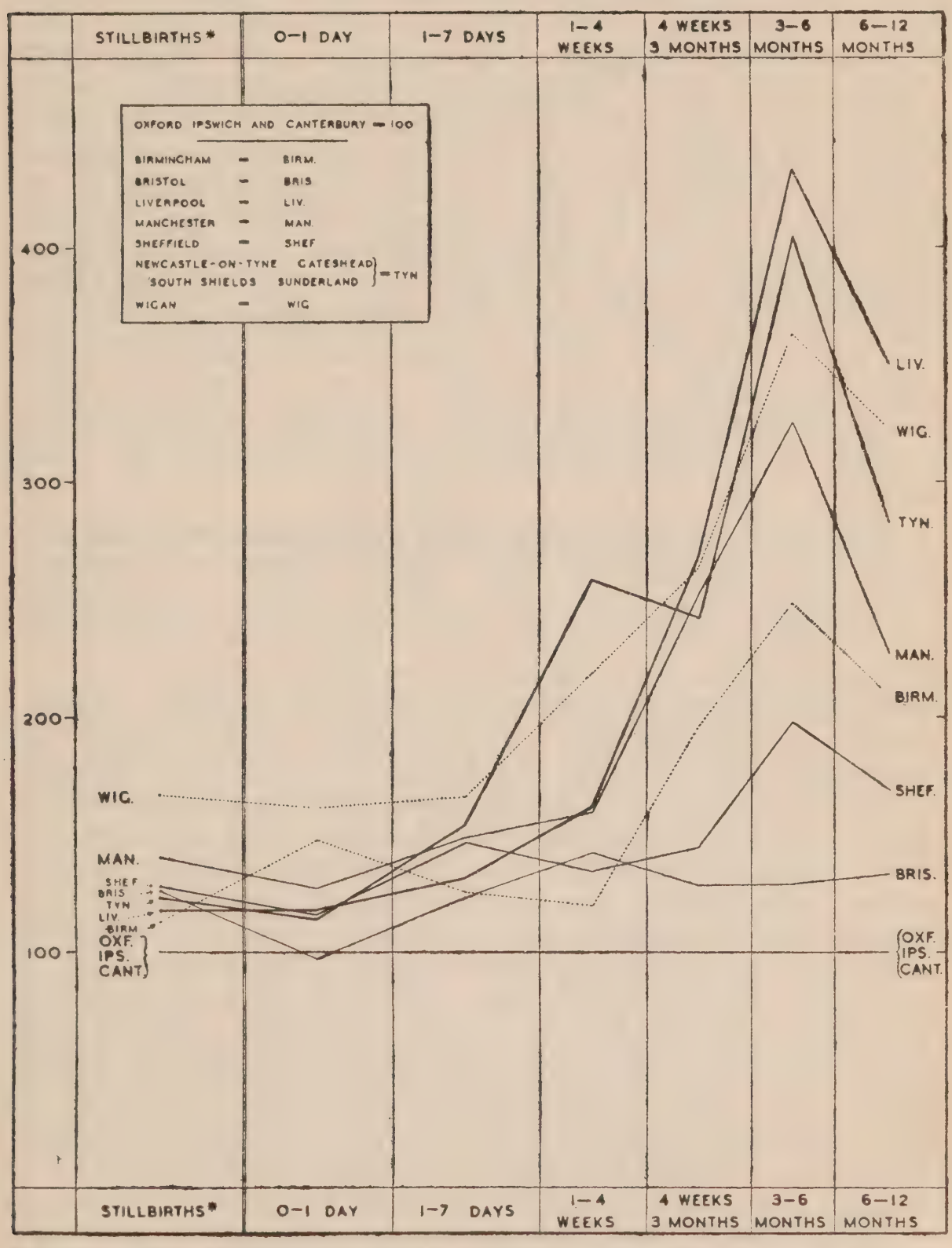
Some indices of the social conditions in the various urban groups of Diagram 4 at the time of the Census of 1931 are given below :—

——	Infant mortality in 1933–37 at 3–12 months.	No. of persons per room 1931.	Per cent. of population in private families at densities of over 2 per room. 1931.	Proportion per 1,000 occupied males age 14 and over in social clasess in 1931 :—					No. of persons per family 1931.
				I.	II.	III.	IV.	V.	
Oxford, Ipswich and Canterbury (aggregate) ..	9·8	0·71	2·91	25	127	540	126	181	3·67
Bristol ..	12·9	0·81	5·29	21	125	504	117	233	3·63
Birmingham ..	22·0	0·83	7·08	16	112	549	161	162	3·85
Manchester ..	25·8	0·87	6·72	16	117	516	156	196	3·81
Sheffield ..	17·8	0·87	8·24	14	101	503	168	214	3·84
Liverpool ..	37·4	0·93	10·94	14	89	462	129	305	4·06
Wigan ..	33·0	1·00	11·47	12	90	477	273	147	4·10
Tyneside group	32·1	1·18	26·34	16	89	488	182	225	3·89

The urban aggregates are arranged in ascending order of average density of persons per room and it is apparent that the infant mortality rates at 3–12 months follow almost the same order except that Sheffield's rate is exceptionaly low and Liverpool's rate is unduly high, the latter being double the former notwithstanding the small difference between their housing indices. Liverpool's population was characterized at the last Census by a very high proportion of the unskilled Class V. who formed 305 per 1,000, compared with 214 in Sheffield and 196 in Manchester. As can be seen from Table XXI. of the Review for 1936, the mortality at

DIAGRAM 4.

RATES OF PRE-NATAL AND INFANTILE MORTALITY (AT DIFFERENT PERIODS OF THE FIRST YEAR OF LIFE) IN 1933–37 IN CERTAIN COUNTY BOROUGHS EXPRESSED AS PERCENTAGES OF THE CORRESPONDING RATE IN THE 3 COUNTY BOROUGHS WITH LOWEST INFANTILE MORTALITY.



* NOTE: THE HORIZONTAL SCALE DIVISIONS FROM BIRTH TO 12 MONTHS ARE APPROXIMATELY PROPORTIONAL TO THE TOTAL DEATHS IN ENGLAND AND WALES AT THE AGES SPECIFIED, BUT THE BREADTH OF THE STILLBIRTH DIVISION SHOULD, ON THE SAME SCALE, BE MULTIPLIED BY 3.

ages 3–12 months of legitimate infants, during 1930–32 per 1,000 live births, was related to the social class of the father as follows :—

Class I.	II.	III.	IV.	V.	All classes.
6·7	11·3	18·8	24·1	31·4	21·4

If these rates are multiplied by the proportions in each social class given above the resulting rates would be as follows :—Oxford, Ipswich, Canterbury, 20·5; Bristol 21·2; Birmingham 20·7; Manchester 21·0; Sheffield 21·5; Liverpool 22·5; Wigan 21·3; Tyneside group 21·7. The differing social class distributions would only account, therefore, for a small part of the mortality excess shown by Liverpool and not at all for the divergences between Tyneside or Wigan on the one hand and Bristol or Sheffield on the other. This confirms for infant mortality at 3–12 months a conclusion reached in the Review for 1934 (Text, p. 154) with regard to standardized mortality at all ages, that " a high housing density is a factor which unfavourably affects the mortality in a town even after allowing for the social grouping based upon occupations which is inevitably bound up with housing conditions." When this is considered along with the facts in the next section it must be concluded that a very considerable further reduction in the infant mortality of some of our towns is practicable.

Mortality under Two Years of Age in Various Countries, 1932–36—Table XXVI compares the mean annual death rates per 100,000 live births in the five year period 1932–36 at ages under 1 month and 1–12 months from several broad groups of causes in 12 countries. The countries have been arranged in ascending order of the infant mortality rate from all causes. New Zealand, Australia, Holland, Norway, Switzerland, the United States of America, and also Sweden (*see* Table XXVII) had lower infant mortalities than had England and Wales, the four European countries having registered during 1932–36 rates between 40 and 50 per 1,000 compared with 60 in England and Wales. The unsatisfactory position in comparison with Holland and the Scandinavian countries was commented upon in a consideration of Table CIII of the Review for 1934 where mortality rates at various ages in 1930–32 were compared. Since 1930 infant mortality has declined much more rapidly in Holland and Sweden than in England and Wales, and the divergence had become even more pronounced, therefore, in 1935–36 than it was in 1930–31, as the following mean annual rates show :—

	Per 100,000 live births.			Per cent. of rate in England and Wales.		
	1930–31.	1932–34.	1935–36.	1930–31.	1932–34.	1935–36.
Norway ..	4,598	4,464	4,311	73	71	75
Holland ..	5,024	4,428	3,949	80	71	68
Sweden ..	5,567	4,917	4,455	88	79	77
England & Wales ..	6,312	6,245	5,774	100	100	100

In the five year period 1932–36 neo-natal mortality in England and Wales (corrected to ages under one calendar month) was below that of Germany, Italy, Greece, Canada and the United States of America, but above that of Holland, Norway, Denmark, Switzerland, New Zealand and Australia. This may be seen from Table XXVI and Diagram 5. Of the causes contributing to this mortality during the first month of life prematurity and debility as assigned causes registered rates in ascending order as follows :—Holland, New Zealand, Greece, Australia, Denmark, England and Wales, Canada, Italy, Germany. For congenital malformations the rates depend to a considerable extent upon the rules of selection when joint causes are stated and upon the degree to which malformations are described on death certificates, and the rates for Italy and Greece are probably not comparable with the other rates given in Table XXVI; omitting these, the remaining countries gave rates in ascending order as follows :—Germany, England and Wales, New Zealand, Denmark, Australia, Holland, Canada, United States of America.

Mortality at 1–12 months is represented in the Diagram by the black rectangles. The death rate assigned to measles, whooping-cough and pneumonia ranged from about 3 per 1,000 live births in New Zealand to over 17 in Denmark, Greece and Italy, the rate of about 10·5 per 1,000 in England and Wales being above those of New Zealand, Australia, Holland, United States of America, Canada and Germany. Mortality at this age from diarrhoea and enteritis followed the same sequence as for infant mortality in general.

Table XXVII gives the infant mortality rates under one year of age from five groups of causes in 1932–36 in 14 countries and these are depicted in the Diagram by the total lengths of the upper rectangles in each pair. Death rates at 1–2 years of age (per 100,000 survivors from the first year) in 12 countries during the same period are also given in the same table. For diphtheria as a cause of death England and Wales gave a rate exceeded only by Italy, Greece, United States of America and Australia out of 10 countries, and for measles, whooping-cough and pneumonia the rate was exceeded only by Italy and Greece. The countries for which information for the second year was available have been arranged in Table XXVII in ascending order of the 2-year survival rates given in the last column. In Diagram 5 the 2-year survival rates are depicted by the lengths of the lower rectangles in each pair. It is apparent that, whereas only 36 out of each 1,000 children born alive in New Zealand and about 50 in Australia, Holland and Norway died before their second birthday, the number so dying in England and Wales was 74, in Canada 84, in Belgium 99, in Italy 136 and in Greece 155.

DIAGRAM 5.

INFANT MORTALITY UNDER 1 MONTH AND AT 1–12 MONTHS OF AGE IN 1932–36, AND PROPORTIONS DYING BEFORE 2ND BIRTHDAY OUT OF INFANTS BORN IN 1931–35, IN VARIOUS COUNTRIES.

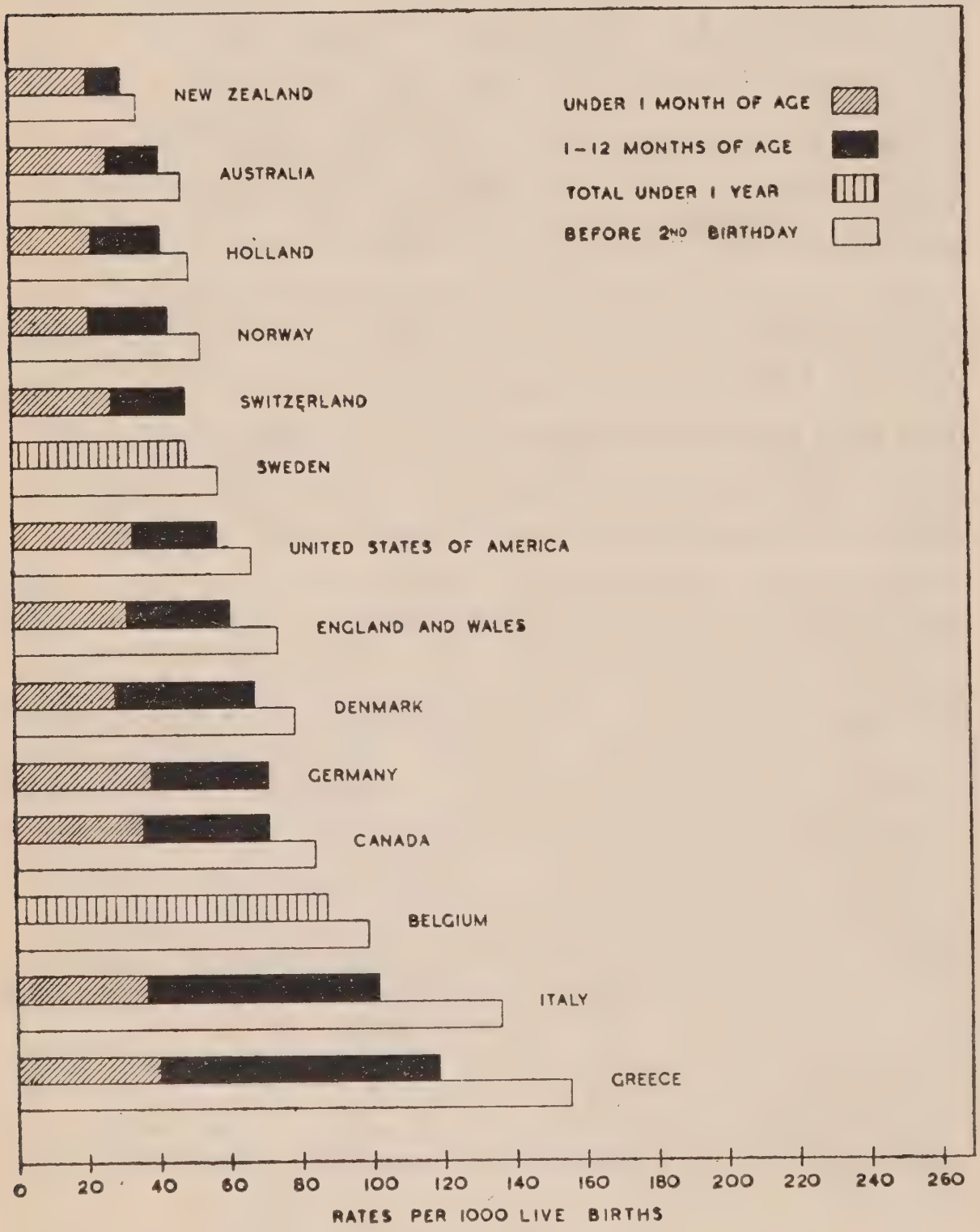


Table XXVI.—Infant death rates from Certain Causes at 0–1 and 1–12 months of age in 12 Countries, 1932–36.

Country.	Period.	Mean annual death rates (per 100,000 live births) at ages :—								
		Under 1 month.				1–12 months.				0–1 year.
		Prematurity and debility 158, 159.	Malformations and birth injury 157, 160.	Other Causes.	All Causes.	Measles, whooping cough, pneumonia	Diarrhœa and enteritis 119.	Other Causes.	All Causes.	All Causes.
New Zealand ..	1932–36	1,082	619	525	2,226	310	72	556	938	3,163
Australia ..	,,	1,469	650	620	2,740	499	215	652	1,365	4,106
Holland ..	,,	960	669	599	2,227	681	268	1,063	2,011	4,238
Norway ..	,,	—	—	—	2,248	—	—	—	2,156	4,404
Switzerland ..	,,	—	—	—	2,882	—	—	—	1,898	4,780
United States of America ..	,,	—	805	—	3,330	813	484	1,146	2,443	5,772
England and Wales ..	,,	1,784*	597*	731*	3,112*	1,066*	490*	1,388*	2,944*	6,055
Denmark ..	,,	1,619	634	627	2,881	1,837	528	1,609	3,973	6,854
Germany ..	,,	2,607	509	676	3,792	1,009	577	1,685	3,271	7,064
Canada ..	,,	1,877	774	918	3,569	934	927	1,677	3,538	7,107
Italy	,,	1,976	(240)	1,480	3,696	1,770	2,979	1,775	6,524	10,220
Greece ..	,,	1,212	(364)	2,421	3,997	1,822	2,488	3,472	7,783	11,780

* In England and Wales these rates are for ages under 4 weeks, and 4 weeks to 1 year, whereas for the other countries the division is at " 1 month " or " 30 days ". For more accurate comparability the England and Wales rates at 0–4 weeks should be increased by about 2 per cent. of the rate for " other causes " and " all causes," and all the rates at 4 weeks to 1 year should be decreased by about 2 per cent.

Table XXVII.—Death rates from certain causes in the first and second years of life in 14 countries, 1932–36; also survival rates to the second birthday.

Country.	Period.	Infant mortality rates under 1 year of age, per 100,000 live births.						Death rates in second year of life per 100,000 survivors to 1 year.				No. of survivors to 2 years per 1,000 born alive in 1931–35.
		Prematurity and debility.	Congenital malformations and birth injury.	Measles, whooping cough and pneumonia.	Diarrhœa and enteritis.	Other causes.	All causes.	Diphtheria.	Measles, whooping cough, pneumonia.	Other Causes.	All Causes.	
New Zealand	1932–36	1,139	776	366	78	805	3,163	22	126	290	437	964
Australia	,,	1,569	796	591	234	919	4,106	46	250	414	711	952
Holland	,,	1,056	833	751	294	1,304	4,238	5*	301*	375*	681*	950†
Norway	,,	1,668	—	847	199	—	4,404	6	308	482	796	947
Sweden	1932–35	—	—	897	236	—	4,835	2	246	444	693	942
United States of America..	1932–36	1,761	958	968	551	1,535	5,772	31	301	581	913	933
England and Wales ..	,,	2,041	831	1,152	545	1,486	6,055	27	680	507	1,213	926
Denmark	,,	1,794	895	1,972	601	1,593	6,854	10	350	419	779	921
Canada	,,	2,199	982	1,061	1,038	1,828	7,107	14	326	667	1,007	916
Belgium	,,	—	—	1,731	938	—	8,792	—	—	—	1,293	899
Italy	,,	2,184	(316)	2,023	3,283	2,414	10,220	74	1,271	2,182	3,526	864
Greece	,,	1,693	(421)	2,219	2,790	4,657	11,780	36	1,013	2,774	3,823	845
Switzerland	,,	1,288	802	587	457	1,646	4,780	—	—	—	—	—
Germany	,,	2,832	643	1,114	677	1,797	7,064	—	—	—	—	—

* For years 1933–36 only.

† Based upon live births in 1932–35 only.

Mortality at Ages over One Year.

Table XXVIII states the crude and standardized death-rates at all ages for sexes and persons for the whole country, as well as the mortality per million living at different ages, for 1936 and 1937, and in order to provide means of comparison with experience of some ten years back, for 1921–30.

The mortality of each sex at ages 25 and over and for males at 15–20 and females at 20–25 was higher than in 1936, but at other ages distinguished in Table XXVIII it was lower. At every age-group for each sex mortality was lower than in 1921–30 except for males at ages 55–65 and 75 and over and for females at ages 85 and over.

Table XXVIII.—Mortality from all Causes per Million Population, 1921–30, 1936 and 1937.

	Males.			Females.			Persons.		
	1921–30.	1936.	1937.	1921–30.	1936.	1937.	1921–30.	1936.	1937.
All Ages.									
Crude	12,927	12,930	13,198	11,401	11,410	11,700	12,131	12,139	12,419
Standardized A ..	11,826	10,434	10,492	9,602	8,152	8,202	10,644	9,213	9,267
Standardized B ..	12,774	11,309	11,345	10,953	9,405	9,460	11,827	10,310	10,352
0–	25,345	19,068	18,567	20,386	14,913	14,660	22,896	17,025	16,647
5–	2,513	2,104	1,969	2,327	1,848	1,739	2,420	1,977	1,855
10–	1,658	1,276	1,217	1,637	1,128	1,124	1,648	1,203	1,171
15–	2,602	2,046	2,103	2,483	1,853	1,838	2,543	1,950	1,972
20–	3,335	2,901	2,845	3,030	2,551	2,558	3,178	2,723	2,700
25–	3,890	2,974	3,066	3,458	2,729	2,790	3,656	2,848	2,925
35–	6,379	4,860	4,973	4,830	3,906	3,945	5,544	4,349	4,426
45–	11,615	10,845	11,074	8,554	7,552	7,606	10,006	9,065	9,198
55–	24,363	24,149	24,865	18,124	16,384	16,680	21,086	19,998	20,471
65–	59,152	56,586	57,386	46,014	42,672	43,041	51,907	48,927	49,491
75–	136,934	137,285	138,534	114,049	108,068	110,380	123,108	119,619	121,497
85 and upwards	283,060	291,422	292,312	261,506	259,530	269,889	268,676	269,871	277,230

A. English Standard (Population of England and Wales, 1901). B. International Standard.

(*See* page 11.)

The extent of the fall at the various ages can be better appreciated from Table XXIX in which the mortality in 1935, 1936 and 1937 is expressed as a percentage of the rate in the decennium 1921–30. At " all ages " the standardized rates according to the English standard have declined since 1921–30 by 11 per cent. for males and 15 per cent. for females. The fall has been greater at 10–15 than at any other age, although 1935 registered the greatest improvement at ages 0–5.

At each age period under 25 and between 45 and 85 the proportionate decline in mortality since 1921–30 has been greater for females than males, but between 25 and 45 the reverse is true. At ages between 15 and 35 there was a rapid improvement from 1933 to 1936 for each sex following a period of little change, but in 1937, as at most adult ages this was not maintained.

Table XXIX.—Mortality at various ages from all causes in 1935, 1936 and 1937 per cent. of that for the same sex and age in 1921–30.

—	Males.			Females.			Persons.		
	Per cent. of 1921–30.			Per cent. of 1921–30.			Per cent. of 1921–30.		
	1935.	1936.	1937.	1935.	1936.	1937.	1935.	1936.	1937.
All Ages—									
Crude	96·6	100·0	102·1	97·0	100·0	102·6	96·8	100·0	102·4
Standardized A	86·0	88·2	88·7	83·7	84·9	85·4	84·8	86·6	87·1
Standardized B	86·4	88·5	88·8	84·6	85·9	86·4	85·4	87·2	87·5
0–	71	75	73	70	73	72	70	74	73
5–	85	84	78	83	79	75	84	82	77
10–	81	77	73	79	69	69	80	73	71
15–	82	79	81	80	75	74	81	77	78
20–	87	87	85	86	84	84	86	86	85
25–	80	76	79	84	79	81	82	78	80
35–	78	76	78	83	81	82	80	78	80
45–	93	93	95	87	88	89	90	91	92
55–	95	99	102	90	90	92	93	95	97
65–	94	96	97	90	93	94	92	94	95
75–	96	100	101	92	95	97	94	97	99
85 and upwards	95	103	103	92	99	103	93	100	103

A. English Standard (Population of England and Wales 1901).
B. International Standard. (*See* page 11.)

Table XXX measures the effect of changes in the birth-rate upon the mortality rate at 0–5 years in 1911–14 and from 1917 onwards, by comparison with the trend of rates which have been standardized by reference to the 1901 Census population at individual years of age up to 5. It shows that in all these years the fall of the birth-rate has caused some under-statement of crude mortality at 0–5 for each sex, except during the three years 1920–22, when the temporary rise in the birth rate after the war reversed the process.

The standardized rate at these ages in 1937 was equal to that of 1935, which was the lowest recorded.

Mortality at 1–5.—Table XXXI shows that mortality has fallen since 1911–14 more rapidly for the years immediately following infancy than for the first year of life itself. The standardized rate at ages 1–5 in 1937 was 54 per cent. of that in 1921–30, 72 per cent. of the mean rate in 1931–33 and 99 per cent. of that in 1935. Compared with 1921–30 the decline has been least in the first year and greatest in the second, then decreasing continuously to the fifth year of life. The second year of life usually manifests the greatest degree of annual variation and would seem to be the age of greatest susceptibility to disturbing factors. That the death-rates

Table XXX.—Comparison of Crude and Standardized Death-Rates per 1,000 living at Age 0–5, 1911–14 and 1917–37.

——	Males.		Females.		Persons.	
	Crude.	Standardized.	Crude.	Standardized.	Crude.	Standardized.
1911–14 ..	40·6	40·8	33·9	34·2	37·3	37·5
1917	31·8	34·3	26·3	28·4	29·1	31·4
1918	38·9	43·1	34·1	37·5	36·5	40·3
1919	32·8	36·6	26·4	29·5	29·6	33·1
1920	36·2	31·8	28·9	26·0	32·5	29·0
1921	32·3	29·2	25·8	23·6	29·1	26·4
1922	30·2	28·5	24·5	23·1	27·4	25·8
1923	24·3	25·0	19·6	20·1	22·0	22·5
1924	25·1	27·3	20·2	21·8	22·6	24·6
1925	25·3	27·1	20·7	22·1	23·0	24·6
1926	23·3	24·9	18·8	20·0	21·1	22·4
1927	23·7	25·2	18·9	20·0	21·3	22·6
1928	21·9	23·3	17·4	18·5	19·7	20·9
1929	26·3	27·7	21·6	22·7	24·0	25·2
1930	20·5	21·4	16·0	16·7	18·3	19·1
1931	22·4	23·1	17·4	18·0	19·9	20·6
1932	21·0	22·0	16·8	17·6	19·0	19·8
1933	19·9	21·2	15·8	16·9	17·9	19·1
1934	19·3	20·7	15·6	16·7	17·5	18·7
1935	17·9	18·8	14·2	15·0	16·1	16·9
1936	19·1	19·7	14·9	15·4	17·0	17·5
1937	18·6	18·9	14·7	15·0	16·6	16·9

Table XXXI.—Mortality per 1,000 living (both sexes), in each of the first Five Years of Life, 1911–14, 1921–30, 1931–33, 1934, 1935, 1936 and 1937.

Year of Life.	1911–14.	1921–30.	1931–33.	1934.	1935.	1936.	1937.	1937 per cent. of 1921-30.
0–1	118·16	75·51	66·91	63·12	60·16	61·80	60·56	80·2
1–2	34·06	19·88	14·27	12·75	9·59	10·72	9·72	48·9
2–3	13·68	8·51	6·19	5·92	4·63	4·98	4·47	52·5
3–4	8·32	5·23	4·21	4·47	3·38	3·37	3·32	63·5
4–5	6·14	3·90	3·40	3·56	2·97	3·00	2·83	72·6
0–5 Crude ..	37·27	22·90	18·93	17·50	16·09	17·03	16·65	72·7
0–5 Standard	37·52	23·52	19·83	18·74	16·90	17·55	16·94	72·0
1–5 Crude ..	15·62	9·47	7·01	6·59	5·08	5·50	5·11	54·0
1–5 Standard	15·54	9·37	7·01	6·67	5·14	5·51	5·08	54·2

of children aged 1–5 are more sensitive than those of infants or older children to environmental factors such as are indicated by urbanization or density of persons per room was shown in the Review for 1932 (Table XXVIII).

Compared with the preceding year an improvement of 9 per cent. was registered in the second year of life, of 10 per cent. in the third, of 1 per cent. in the fourth and of 6 per cent. in the fifth.

The distribution throughout the country of mortality at 1–2 and 2–5 is shown in Table XXXII, which may be compared with Table XIX (Infant Mortality). The greatest excess over the general average recorded in the table at ages 1–2 is for North II, which shows a rate more than twice the corresponding rates for the South-East and South-West. Next in order come North I and North IV. At 2–5 North I shows the highest rate, followed by North II and IV, whilst the Southern regions and the East occupy the lowest places in the order of mortality at both ages, the excess of Northern over Southern rates amounting to 80 or 90 per cent.

Table XXXII.—Mortality in Early Childhood: distribution at ages 1–2 and 2–5 in 1931–35 and 1937.

—	Deaths per 1,000 Living (both sexes).				Mortality in 1937 per cent. of 1931–35.		Mortality in 1937 per cent. of that in England and Wales.	
	1–2 years.		2–5 years.					
	1931–35.	1937.	1931–35.	1937.	1–2.	2–5.	1–2.	2–5.
England and Wales	13·11	9·72	4·42	3·54	74	80	100	100
South-East	10·02	7·00	3·56	2·58	70	72	72	73
Greater London	11·38	7·36	3·93	2·63	65	67	76	74
Remainder of South-East..	7·90	6·47	2·98	2·50	82	84	67	71
North	17·61	12·53	5·79	4·58	71	79	129	129
North I	20·72	13·92	6·36	4·89	67	77	143	138
„ II	16·59	14·04	5·43	4·77	85	88	144	135
„ III	14·68	10·21	5·62	3·95	70	70	105	112
„ IV	18·14	12·88	5·72	4·76	71	83	133	134
Midland	12·42	10·89	3·93	3·69	88	94	112	104
Midland I	12·56	11·67	4·01	3·80	93	95	120	107
„ II	12·15	9·35	3·78	3·46	77	92	96	98
East	8·75	7·64	3·20	2·65	87	83	79	75
South-West	8·26	5·76	3·07	2·67	70	87	59	75
Wales	13·62	10·54	4·85	4·03	77	83	108	114
Wales I	14·96	10·65	5·15	3·97	71	77	110	112
„ II	9·48	10·22	3·96	4·20	108	106	105	119
County Boroughs*	17·08	12·55	5·37	4·27	73	80	129	121
Other Urban Districts* ..	12·20	9·27	4·45	3·71	76	83	95	105
Rural Districts*	9·56	7·96	3·34	2·95	83	88	82	83
Greater London—								
Administrative County ..	13·98	8·91	4·47	2·85	64	64	92	81
Outer Ring	8·71	6·09	3·39	2·45	70	72	63	69

* Outside Greater London.

The sensitiveness of mortality at age 1–2 to the general healthiness of the year has been pointed out in previous Reviews. It is to be expected that the most susceptible age would also exhibit the

greatest range of regional variation. When the regional rates are expressed as percentages of the rate for England and Wales, their range usually tends to increase during the first two years of life and then decrease. In 1937 the range between the ages of 6 months and 2 years was 56–134 at 6–9 months, 63–126 at 9–12 months, 59–144 in the second year, and 71–138 at ages 2–5 (Tables XIX and XXXII).

The association with urbanization at these four age periods is reflected in the differences between the percentage rates for the county boroughs and rural districts outside Greater London, amounting to 59 at 6–9 months, 33 at 9–12 months, 47 at 1–2 years and 38 at 2–5, the range being greatest at 6–9 months.

Comparison of 1937 mortality with the mean rates in 1931–35 (Table XXXII) shows at ages 1–2 a decline of 26 per cent. in England and Wales, 35 per cent. in Greater London (measles not being epidemic in 1937), 30 per cent. in the South-West, 29 per cent. in the North, 23 per cent. in Wales and 13 per cent. in the East.

At 2–5 the fall in the national rate was 20 per cent., and amongst the separate regions the fall ranged from 33 per cent. in Greater London to 6 per cent. in the Midlands. The rural district rate improved by 12 per cent. compared with 20 per cent. for the county boroughs.

The principal *causes of death* at ages 1–5 in 1937 were pneumonia, tuberculosis, diphtheria, whooping cough and measles.

Table XXXIII provides a comparison of death-rates at 1–5 years of age from an extended list of causes in England and Wales during 1937 with the corresponding rates in 1911–14 and 1921–30.

Table XXXIII.—Deaths from Various Causes per Million living at Ages 1–5 Years in 1911–14, 1921–30 and 1937. (Both Sexes.)

Cause of Death.	Death-rate.			Cause of Death.	Death-rate.		
	1911–14.	1921–30.	1937.		1911–14.	1921–30.	1937.
7. Measles	2,673	1,104	293	105: 2. Laryngitis	152	51	14
8. Scarlet fever	373	143	65	106. Bronchitis	872	448	124
9. Whooping cough	1,216	864	367	107. Broncho-pneumonia ..	2,170	2,120	1,091
10. Diphtheria	781	535	466	108 & 109. Pneumonia (Lobar and not otherwise defined).	866	536	309
11. Influenza	60	270	172				
23. Tuberculosis of Respiratory System.	237	136	57	Other Respiratory Diseases ..	140	80	40
24. Tuberculosis of Nervous System.	705	445	275	118: 1. Inflammation of the Stomach.	94	43	10
25. Tuberculosis of Intestines and Peritoneum.	391	157	47	119 & 120. Diarrhœa and enteritis	1,639	468	190
26–32. Other Tuberculous Diseases.	288	155	98	130. Acute nephritis ..	89	43	16
63: 1. Rickets	172	93	28	157. Congenital malformations.	85	79	86
79. Meningitis	451	188	88	181. Burns and scalds ..	360	247	178
86. Convulsions	460	179	53	Other Violence	274	239	255
				Other Causes	1,071	847	791
				All Causes	15,619	9,470	5,114

Mortality from all causes combined at these ages was 33 per cent. of the rate in 1911–14 and 54 per cent. of that in 1921–30. The only causes showing an increase over 1921–30 were congenital malformations and the group of violent causes other than burns and scalds. Scarlet fever, measles, tuberculosis of the respiratory and nervous systems, convulsions, laryngitis, bronchitis and acute nephritis all established new low records.

The decline in mortality assigned to various infective and respiratory diseases and to meningitis, convulsions and rickets since 1921 is revealed by the annual rates in Table XXXIV.

Comparing the 1937 rates with the simple averages of the annual rates in 5 triennial periods from 1921–23 to 1933–35 the rapid decline for whooping cough is shown by the series 1145, 858, 909, 514, 416, 367 and for bronchitis and pneumonia by the series 3489, 3062, 3176, 2069, 1707, 1524. These may well cease to be important causes of death amongst young children within another 15 years, and the same may be said of diarrhoea with 624, 464, 382, 271, 238, 190 as successive rates. Diphtheria with 655, 462, 495, 455, 511, 466 and scarlet fever with 199, 142, 95, 98, 130, 65 do not show such rapid improvement in recent years. Measles gave an average rate of 1,190 in the 6 years 1922–27 and 693 in the 6 years 1932–37.

Table XXXIV.—Death-Rates from Various Causes per Million living at Ages 1–5 Years in each year 1921–1937.

—	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria.	Bronchitis and Pneumonia.	Diarrhœa and Enteritis.	Meningitis.	Convulsions.	Rickets.
1921 ..	603	198	853	778	3,305	990	288	321	109
1922 ..	1,530	229	1,838	723	4,461	403	263	268	86
1923 ..	1,332	169	745	464	2,700	479	233	219	98
1924 ..	1,155	149	716	438	3,368	424	205	189	94
1925 ..	1,326	172	1,108	473	3,033	466	188	191	102
1926 ..	848	105	749	474	2,784	502	165	153	86
1927 ..	950	90	743	448	3,339	358	157	133	80
1928 ..	1,122	92	572	504	2,250	368	120	99	102
1929 ..	965	102	1,411	533	3,940	419	138	117	89
1930 ..	1,142	116	401	552	1,792	276	111	89	78
1931 ..	923	87	540	427	2,487	271	114	87	80
1932 ..	988	92	602	387	1,929	266	126	85	66
1933 ..	571	129	494	394	1,986	300	106	77	41
1934 ..	1,117	166	446	607	1,761	213	97	66	35
1935 ..	392	94	307	531	1,373	200	80	60	38
1936 ..	796	82	413	464	1,436	178	83	71	26
1937 ..	293	65	367	466	1,523	190	88	53	28

Table XXXV gives the mean annual death-rates at 1–5 from the chief causes during 1931–35, 1936 and 1937 in each region and density aggregate, pneumonia being combined with bronchitis owing to regional peculiarities in the certification of these two diseases as causes of death amongst young children.

The diphtheria death rate has fallen in Greater London from 55 per 100,000 at ages 1–5 in 1931–35 to 34 in 1937; in other towns

Table XXXV.—Mortality per 100,000 living from Various Causes at 1–5 years in Geographical Regions and Density Aggregates, 1931–35, 1936 and 1937.

—		England and Wales.	Greater London	County boroughs *	Other Urban districts *	Rural districts *	South-East *	Wales I	Wales II
All Causes	1931–35	656	579	826	635	484	419	755	527
	1936 ..	550	566	654	496	437	369	537	531
	1937 ..	511	385	639	511	421	351	565	568
Diphtheria ..	1931–35	47	55	59	43	25	26	64	48
	1936 ..	46	39	64	42	31	17	46	48
	1937 ..	47	34	62	47	33	20	54	82
Measles	1931–35	80	88	118	65	34	30	88	38
	1936 ..	80	147	102	42	29	42	16	51
	1937 ..	29	7	53	27	16	14	52	8
Whooping-cough ..	1931–35	48	50	63	41	31	29	41	29
	1936 ..	41	46	51	36	28	17	46	32
	1937 ..	37	33	46	33	31	28	36	38
Pneumonia and Bronchitis	1931–35	191	145	258	189	132	108	225	129
	1936 ..	144	121	187	131	110	100	136	94
	1937 ..	152	116	209	145	103	82	169	148
Tuberculosis ..	1931–35	60	49	72	62	49	55	55	46
	1936 ..	47	40	51	50	40	42	58	35
	1937 ..	48	33	56	51	45	44	48	38
Violent causes ..	1931–35	44	35	48	44	49	33	61	45
	1936 ..	44	31	48	45	50	31	63	59
	1937 ..	43	33	43	46	50	36	60	55

		North I.	North II	North III	North IV.	Midland I.	Midland II.	East.	South-West.
All Causes	1931–35	985	818	784	879	609	582	455	433
	1936 ..	706	689	669	710	488	480	403	376
	1937 ..	716	714	554	684	580	496	390	344
Diphtheria ..	1931–35	42	70	68	66	30	27	23	29
	1936 ..	85	90	73	68	34	37	17	35
	1937 ..	90	58	66	76	40	41	17	16
Measles	1931–35	141	87	84	132	69	57	34	32
	1936 ..	62	97	84	118	52	31	38	33
	1937 ..	40	58	16	50	52	44	20	5
Whooping-cough ..	1931–35	60	48	53	67	51	39	39	31
	1936 ..	53	19	52	66	37	42	28	19
	1937 ..	38	52	36	51	37	31	33	28
Pneumonia and Bronchitis	1931–35	323	278	239	276	183	177	117	102
	1936 ..	200	207	195	190	139	132	105	88
	1937 ..	239	243	174	220	174	140	90	78
Tuberculosis ..	1931–35	87	78	68	66	56	59	57	50
	1936 ..	60	68	57	53	39	33	54	35
	1937 ..	62	66	46	56	56	60	48	35
Violent causes ..	1931–35	54	54	51	55	46	43	38	36
	1936 ..	52	56	48	52	41	56	46	43
	1937 ..	48	57	54	51	43	42	37	34

* Excluding Greater London.

it has slightly increased and in the rural districts has risen from 25 to 33. North I, the Midlands and Wales II registered considerable increases in 1937 whilst the East, South-West and North II showed decreases. Whooping cough rates have fallen in London and the towns and in most of the regions except Wales II. Pneu-

monia and bronchitis rates continued to decline in the Southern and Eastern regions and in North III, but showed increases compared with the previous year in the other regions. Tuberculosis rates registered a further considerable fall in Greater London and in North III, but in the Midlands they returned to the 1931–35 level; the rural districts have not registered the same degree of improvement as the urban rates in recent years.

Regional rates of measles mortality flucuate a great deal from year to year with the prevalence of epidemics and the periodicity in London Administrative County, and its effect upon the total mortality of young children from 1922 to 1936 can be seen by reference to Table XXIX of the Review for 1936. The measles death rates for the second year of life per 100,000 living in London in successive years from 1922 to 1937 have been as follows :—808, 187, 693, 187, 555, 104, 833, 144, 755, 76, 638, 68, 713, 9, 480, 16. It is noteworthy that the mortality from this cause in the inter-epidemic years has now fallen to very low levels. The London death rates from all causes in the second year of life, expressed as percentages of the national rate, in the same series of years, have been as follows :—148, 81, 115, 82, 104, 81, 139, 105, 135, 85, 128, 91, 151, 72, 133, 92.

Table XXXVI shows the numbers of survivors at the end of one, two and five years of life out of 10,000 children born alive in each region or density aggregate, assuming continuance of the average mortality experience of 1936–37 throughout the first five years of life. This table continues a series commenced in 1911–14 and repeated in 1922, 1923, 1926 and 1931, that for 1931 when the geographical divisions were the same as at present, having been given in Table XXIV of the Review for 1932.*

The reason for basing the present table on the mean death rates of two years instead of a single year is that, in Greater London and North I particularly, the biennial occurrence of measles epidemics has now a large influence on the total mortality of children under 5 years. Between birth and their 5th birthday children do not pass through 5 epidemic years but only through 2 or 3, and therefore survival rates to 5 years based upon the death rates of a single year are depressed to a fallacious extent if that year is an epidemic year in the region concerned, since each of the 5 years of life contributes its large quota of measles deaths. Similarly, if the year selected is not an epidemic year the survival rate is enhanced to a fallacious extent by the supposition that the children are never

* The survival rates for 1936–37 have been calculated by (1) deducting the mean of the infant mortality rates per 10,000 (taken from Table XV and its counterpart in 1936) from 10,000, (2) multiplying the resulting survivors by the ratio of (1,000 — half the mean of the rates at 1–2 years as given in Table XXXII and its counterpart in 1936) to (1,000 + the same figure), and (3) multiplying the resulting survivors by the ratio of (1,000 — one and a half times the mean of the rates at 2–5 years as given in the same tables) to (1,000 + one and a half times the same figure).

Table XXXVI.—Survival Rates of Early Childhood in Geographical Regions and Classes of Area, based upon mean death rates in 1936–37. Survivors of 10,000 children born alive.

	England and Wales.	South-East.	Greater London.	Remainder of South-East.	North.	North I.	North II.	North III	North IV.	Midland.	Midland I.
At end of :—											
First year	9,419	9,492	9,448	9,559	9,326	9,259	9,360	9,373	9,319	9,418	9,420
Second year	9,323	9,413	9,359	9,495	9,205	9,134	9,232	9,267	9,194	9,322	9,320
Fifth year	9,221	9,331	9,271	9,423	9,076	9,013	9,102	9,146	9,064	9,225	9,221

	Midland II.	East.	South-West.	Wales.	Wales. I	Wales II.	Density Summary of all Areas outside Greater London.			London Administrative County.	London's Outer Ring.
							County boroughs.	Other urban districts.	Rural districts.		
At end of :—											
First year	9,413	9,511	9,531	9,378	9,374	9,391	9,339	9,448	9,484	9,371	9,513
Second year	9,325	9,439	9,468	9,285	9,279	9,305	9,221	9,361	9,407	9,263	9,441
Fifth year	9,231	9,361	9,394	9,173	9,169	9,186	9,102	9,260	9,322	9,162	9,364

exposed to the risk of a measles epidemic up to the age of 5, a contingency which in most regions could not occur under present conditions of measles epidemicity. The effect of this fallacy (which is inherent in any life table based upon a period during which epidemics happened to be present to an unusual extent) can be seen by comparing the survival rates of Greater London and North I based on the death rates of 1931, when there was no measles epidemic in the former area but a considerable epidemic in the latter, with those based on the mortality of 1936 when the position was reversed.

	Greater London.		North I.	
	1931.	1936.	1931.	1936.
Deaths at 0–5 years of age :—				
From all causes	9,963	9,358	5,952	3,768
,, measles	128	839	628	139
,, whooping cough	474	422	224	132
Per cent. due to measles	1·28	8·97	10·55	3·69
,, ,, whooping cough ..	4·76	4·51	3·76	3·50
Number dying before 5 years out of 10,000 born if above mortality continued :—				
From all causes	802	776	1,370	1,002
,, measles	10	70	145	37
,, whooping cough	38	35	52	35
,, other causes	754	671	1,173	930

	Greater London.		North I.	
	1931.	1936.	1931.	1936.
Apparent change in survival rates to 5 years out of 10,000, from 1931 to 1936 :—				
Total change	—	+ 26	—	+ 368
Due to measles variation	—	— 60	—	+ 108
Apart from measles	—	+ 86	—	+ 260

The apparent handicap to the North I child compared with the Greater London child according to 1931 rates amounted to 568 deaths before 5 years out of each 10,000 born, whereas at 1936 rates it was only 226, but if the fallacy due to biennial measles is eliminated by using the mean rates of two successive years the handicap amounted in 1931–32 to 413 deaths out of 10,000 born and in 1936–37 to 258.* This is a remarkable improvement, nevertheless, the North I survival figure having risen between 1931–32 and 1936–37 from 8,758 to 9,013, a saving of 255 out of each 10,000 born, whilst in the same period the Greater London figure rose from 9,171 to 9,271, a saving of 100 out of each 10,000 born.

The survival rate to 5 years now exceeds 94 per cent. in the South-East excluding Greater London and has almost reached that level in the East and South-West; in the Midlands and Wales the rates are around 92 per cent. and in the North around 91 per cent. The improvement since 1931 has been greatest in the Northern regions and Wales and least in the South and East. Comparing the density aggregates, there was in 1931–32 an excess of survivors to 5 years in rural districts over county boroughs amounting to 309 out of 10,000 born, but in 1936–37 this was reduced to 220, the county borough survival rate increasing to a greater extent (from 8,912 to 9,102) than the rural district rate (from 9,221 to 9,322).

Mortality at 5–15.—The increase which occurred between 1932 and 1934 in the death-rate of children aged 5–10. due in the main to diphtheria, has been followed by a fall in each year since, the rate for 1937 being the lowest yet recorded. For diphtheria, although the rate declined from the high level of 610 reached in 1934 to 445 per million living in 1937, it remained higher than in any of the years 1922–33. Table XXXVII shows that the residual rate from all causes except diphtheria fell to 1·97 per 1,000 in 1923, fluctuated slightly until 1929, declined again to 1·77 by 1932, remained at

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* The difference 258=9271—9013 from Table XXXVI. For the other regions the effect of using two years instead of one is less pronounced, the 1936 5-year survival figures calculated from 1936 only on the same basis as those for 1931 being as follows :—South East, excluding Greater London, 9,411, North II 9,129, North III 9,101, North IV 9,073, Midland I 9,230, Midland II 9,223, East 9,355, South West 9,379, Wales I 9,179, Wales II 9,185, County Boroughs 9,096, other Urban Districts 9,264, Rural Districts 9,305, London County 9,088.

1·82 in 1933 and 1934 and fell to 1·41 in 1937. The measles rate has not manifested any consistent change at this age during the last 14 years, but the pneumonia rate has tended to decline since 1929. Mortality from diseases of the ear and mastoid which increased considerably from 41 per million in 1922 to 89 in 1934 fell to 55 in 1937. The risk of death from violence, which had been falling since 1933, increased slightly in 1937. The tuberculosis rate continued its steady decline.

Table XXXVII.—Death-Rates at Ages 5-10 per Million Living from Various Causes, 1921-37.

—	All Causes.	Diphtheria.	All except Diphtheria.	Measles.	Tuberculosis, all forms.	Diseases of Ear and Mastoid.	Pneumonia.	Violence.
1921 ..	2,759	542	2,217	47	408	51	285	255
1922 ..	2,562	411	2,152	111	388	41	260	244
1923 ..	2,252	282	1,971	99	391	44	243	239
1924 ..	2,302	253	2,049	98	367	47	259	261
1925 ..	2,470	308	2,161	129	354	42	294	264
1926 ..	2,427	374	2,053	87	341	57	267	276
1927 ..	2,332	309	2,023	81	332	56	303	299
1928 ..	2,329	372	1,957	117	318	54	242	307
1929 ..	2,461	392	2,069	77	297	57	297	328
1930 ..	2,282	410	1,872	116	286	61	215	307
1931 ..	2,144	320	1,824	90	263	59	229	296
1932 ..	2,070	298	1,773	103	243	63	212	294
1933 ..	2,194	377	1,817	61	224	73	228	302
1934 ..	2,428	610	1,819	133	225	89	196	272
1935 ..	2,032	517	1,515	47	195	62	156	264
1936 ..	1,977	480	1,497	88	180	66	166	257
1937 ..	1,855	445	1,410	41	161	55	151	265

Table XXXVIII compares the death-rates during 1931–35, 1936 and 1937 from several important causes at the ages of school life, 5–15, in the regions and density aggregates. The diphtheria rate in 1937 was substantially below the mean annual rate of 1931–35 in Greater London, the South-East, East, North III and Wales I, but was appreciably higher in North I and IV, Wales II and the Midlands. Heart disease rates continued to improve in most regions. Mortality from violent causes was slightly greater in rural areas than in Greater London or the towns and Midland I again gave the highest rate and Wales II the lowest.

Mortality of the Aged.—Persons over 70 years of age numbered 297 per 10,000 total population in 1911, 344 in 1921 and 426 in 1931, and were estimated as forming 486 per 10,000 in 1937.

The causes of death at ages over 70 are grouped, as in previous years, in Table XXXIX.

The outstanding changes in the proportionate distribution of certified causes which have occurred between 1921–30 and 1937 are seen to be a decline in the deaths classed to bronchitis and old age and a corresponding rise in those classed to heart diseases. Cancer now accounts for 12 per cent. of these deaths.

Table XXXVIII.—Mortality per 100,000 living from Various Causes at 5–15 years in Geographical Regions and Density Aggregates, 1931–35, 1936 and 1937.

—		England and Wales.	Greater London.	County boroughs *	Other Urban districts *	Rural districts *	South-East *	Wales I	Wales II
All Causes	1931–35	177	163	200	177	154	144	195	170
	1936 ..	157	134	182	158	137	127	147	152
	1937 ..	150	124	173	151	136	124	154	174
Diphtheria ..	1931–35	25	24	32	24	17	18	29	31
	1936 ..	28	17	38	31	19	15	21	27
	1937 ..	27	17	36	29	19	14	20	47
Tuberculosis, all forms	1931–35	23	18	29	23	19	16	30	25
	1936 ..	18	14	23	18	14	15	22	18
	1937 ..	17	14	21	17	14	12	23	21
Heart disease	1931–35	11	11	13	11	8	6	19	9
	1936 ..	10	9	12	10	7	6	15	13
	1937 ..	9	8	10	8	6	5	12	11
Diseases of digestive system ..	1931–35	16	15	17	17	17	15	18	21
	1936 ..	15	13	16	15	15	13	17	15
	1937 ..	14	12	13	15	14	13	13	18
Violent causes	1931–35	22	23	22	21	22	20	22	17
	1936 ..	20	19	19	20	21	19	17	15
	1937 ..	21	19	22	20	23	21	23	13

—		North I.	North II.	North III.	North IV.	Midland I.	Midland II.	East.	South-West.
All Causes	1931–35	226	211	214	208	166	153	147	138
	1936 ..	193	196	175	201	164	143	115	137
	1937 ..	201	174	154	183	163	143	126	115
Diphtheria ..	1931–35	20	42	46	36	18	12	17	15
	1936 ..	49	49	43	46	25	26	8	19
	1937 ..	55	35	32	46	28	20	10	14
Tuberculosis, all forms	1931–35	48	33	22	25	20	21	22	17
	1936 ..	30	25	17	23	15	19	14	11
	1937 ..	26	31	14	19	18	17	14	14
Heart disease	1931–35	12	12	14	14	10	11	6	7
	1936 ..	11	11	12	13	10	9	6	7
	1937 ..	11	8	10	11	10	10	5	5
Diseases of digestive system ..	1931–35	19	17	18	18	16	15	18	15
	1936 ..	16	14	12	18	16	18	8	16
	1937 ..	20	16	12	15	14	12	15	12
Violent causes	1931–35	23	21	23	23	24	21	16	17
	1936 ..	18	21	19	23	24	17	19	19
	1937 ..	22	22	21	22	25	18	20	18

* Excluding Greater London.

Centenarians.—Among the deaths registered during the year there were 100 of reputed centenarians, 21 of whom were males and 79 females. In the preceding three years the numbers were 76, 95 and 96 respectively. Particulars of the ages returned and of the regions concerned are given in Table XL.

Table XXXIX.—Mortality over 70 Years of Age in 1921–30, 1934, 1935, 1936 and 1937, from the chief Causes of Death.

—	Deaths from each Cause per 1,000 Total Deaths.					Mortality per 1,000 Living.				
	1921–30.	1934.	1935.	1936.	1937	1921–30.	1934.	1935.	1936.	1937
MALES.										
Influenza (11)	26	9	11	9	28	2·8	0·9	1·2	1·0	3·1
Cancer (45–53)	107	125	126	124	121	11·8	13·0	13·3	13·6	13·5
Heart Diseases (90–95)	205	335	339	359	357	22·7	34·8	35·8	39·5	39·7
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	195	169	165	161	158	21·6	17·6	17·4	17·8	17·5
Bronchitis (106)	110	54	49	51	48	12·1	5·6	5·2	5·7	5·4
Pneumonia (107–109)	35	31	30	30	31	3·9	3·3	3·2	3·3	3·4
Chronic Nephritis (131 and 132)	29	34	34	32	29	3·2	3·6	3·6	3·5	3·3
Old Age (162)	140	76	79	75	71	15·5	8·0	8·3	8·2	7·9
Other Causes	153	167	167	159	157	17·2	17·4	17·7	17·7	17·3
All Causes	1,000	1,000	1,000	1,000	1,000	110·8	104·2	105·7	110·2	111·1
FEMALES.										
Influenza (11)	31	11	14	11	37	3·0	1·0	1·2	1·0	3·5
Cancer (45–53)	105	118	116	114	112	10·2	10·4	10·3	10·5	10·5
Heart Diseases (90–95)	223	347	360	375	367	21·6	30·6	32·0	34·6	34·6
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	181	170	170	166	161	17·6	15·0	15·2	15·3	15·2
Bronchitis (106)	117	56	48	50	50	11·4	4·9	4·3	4·6	4·7
Pneumonia (107–109)	34	32	29	31	31	3·3	2·8	2·6	2·8	2·9
Chronic Nephritis (131 and 132)	23	29	30	27	25	2·2	2·6	2·7	2·5	2·3
Old Age (162)	165	99	100	93	90	16·0	8·7	8·9	8·6	8·5
Other Causes	121	138	133	133	127	11·7	12·2	11·8	12·1	12·0
All Causes	1,000	1,000	1,000	1,000	1,000	97·0	88·3	88·9	92·1	94·1
PERSONS.										
Influenza (11)	29	10	13	10	33	3·0	0·9	1·2	1·0	3·3
Cancer (45–53)	106	121	120	118	116	10·8	11·5	11·5	11·8	11·7
Heart Diseases (90–95)	215	341	350	368	363	22·0	32·4	33·6	36·6	36·7
Disease of Blood Vessels, including Cerebral Hæmorrhage (82, 96, 97, 99 and 100)	187	169	168	164	160	19·2	16·1	16·1	16·3	16·1
Bronchitis (106)	114	55	49	51	49	11·7	5·2	4·7	5·1	5·0
Pneumonia (107–109)	34	32	30	30	31	3·5	3·0	2·9	3·0	3·1
Chronic Nephritis (131 and 132)	26	32	32	29	27	2·6	3·0	3·1	2·9	2·7
Old Age (162)	154	89	90	85	82	15·8	8·4	8·7	8·5	8·3
Other Causes	135	151	148	145	139	14·0	14·3	14·2	14.4	14·2
All Causes	1,000	1,000	1,000	1,000	1,000	102·7	94·9	95·8	99·6	101·1

Table XL.—Age at Death of Centenarians, 1937.

—	Males.						Females.						
	100 and over	100	101	102	103	104	100 and over	100	101	102	103	104	105
Greater London	4	1	2	—	—	1	23	13	6	1	2	—	1
Remainder of South-East	7	2	2	2	—	1	16	7	5	3	—	1	—
North	4	3	—	1	—	—	5	3	2	—	—	—	—
Midlands	2	1	1	—	—	—	16	8	5	1	—	—	2
East	1	—	—	—	1	—	6	3	2	—	—	1	—
South-West	2	1	—	—	—	1	8	2	4	2	—	—	—
Wales	1	—	—	1	—	—	5	3	—	2	—	—	—
England and Wales	21	8	5	4	1	3	79	39	24	9	2	2	3

CAUSES OF DEATH.

The causes of death of males and females at 18 groups of ages are stated in Table 21 for the whole country, and in Table 22 further detail of age is shown for all causes of significance at ages 0–5. In Table 23 deaths from each cause distinguished are tabulated by month of occurrence and by sex (but not by age). Table 23 differs from all others in referring to date of occurrence and not of registration. Table 21 includes the full International List of causes of death, as revised in 1929. Certain of the numbered items in it are subdivided, and where this occurs the letters (*a*), (*b*), &c., indicate subdivisions in international use, and numbers (1), (2), &c., subdivisions made without international agreement. All other abstracts of the causes of death are arranged in the form of the short list of causes adopted by the Registrar-General in consultation with the Ministry of Health for use during 1931–40. The relation of this list to the detailed International List, as revised by the International Commission in 1929, is shown at the head of Table 24. In Table 6 each cause in the detailed list is also accompanied by the number, in italics, in which the cause is included in the Intermediate List of Causes of Death.

The contents of every heading in the short, intermediate and detailed lists now in use are defined in the Registrar-General's "Manual of the International List of Causes of Death" (1929 Revision),* which should be consulted in all cases where it is desired to ascertain the precise significance of any heading in the lists.

Where two or more causes of death are jointly stated, the classification of the death to one or other of the causes in the International List is carried out in conformity with rules of selection, whose general principles are laid down in the Manual. Thus, with certain exceptions, deaths from violence associated with disease are classed to the appropriate violent cause, and deaths from an infectious disease associated with a local disorder such as a cardiac or renal lesion are classed to the infectious disease. Deaths are therefore not always classed to the immediate cause, but in some instances to a more remote one leading up to it or to a cause which was regarded by the certifying physician as merely contributory. These rules for selection have not been seriously modified since 1901, so that continuity in the resulting tabulation has been maintained. Sufficient understanding and experience of the new form of certificate, introduced in 1927, had first to be gained before replacing the code of selective rules by the expressed opinion of the certifier. However desirable it seemed to make the change at once for certain combinations of causes, the importance of safeguarding the continuity of the statistics of causes of death outweighed such considerations until the quality of certification was such as to justify reliance upon

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the order of statement for all combinations of causes. Sample studies of death certificates during 1935 indicated that such a position would shortly be reached.

In a sample of 9,892 certificates given by medical practitioners, analysed in Table XXXV of the Review for 1935, 43 per cent. named more than one cause of death, these being entered in the same space on the certificate in 1·5 per cent., and in separate spaces but in a clearly impossible order in 1·1 per cent. The remainder with apparently satisfactory multiple entries included some combinations of causes, such as chronic bronchitis with myocardial degeneration, for which it would not be possible to say whether the order of statement was the one intended by the certifier or not, that is to say, an inverted entry could not always be detected. Such reversible combinations of causes form a minority of the combinations met with on death certificates and even if they comprised as many as one-third of all certificates with multiple causes and were subject to the same proportion of errors as the irreversible combinations, this would only raise the true proportion of " inverted entry " certificates to about 1½ per cent. of the total. The proportion of death certificates to which rules of selection would still have to be applied in order to obtain a satisfactory statistical classification has fallen, therefore, below 3 per cent., this proportion of unsatisfactory certificates being higher in London than in the rest of England and Wales as a whole, and lowest in North IV and Wales I. It was also rather lower amongst deaths certified in institutions than amongst other deaths. For deaths certified by coroners, which formed 8 per cent. of the sample, different forms of medical certificate are used, and the classification of such deaths, mainly due to or contributed to, by some form of external violence, forms a special problem from which the use of certain rules of selection cannot be entirely eliminated.

The sample study showed also that the change in the system of selecting the essential cause from two or more causes of death, when it is made, must involve important increases in the numbers of deaths classified to certain causal groups in the International List and important decreases for other groups. If statistical continuity is to be maintained between the periods before and after the change in the system of selection is made, the extent of the transfer of deaths from every cause to every other which will be occasioned by the change must first be carefully evaluated. For this purpose during the years commencing with 1936 a dual tabulation of deaths is being prepared according to cause as determined by (1) the code of selective rules as now used and (2) the order of preference stated on the medical certificate of death (supplemented by the rules in cases where the preference is not clearly stated). By means of this dual tabulation the precise effects on statistical continuity of the change in the system of selection when this is carried out in a subsequent year will be measured and the necessary steps to allow of correction

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for the change will be taken. References are made under various cause headings of this Review to some of the alternative figures which would result in 1937 by following the physician's preference, but apart from such extracts from the dual tabulation all mortality figures in the Review continue to be based upon the unchanged system of rules.

Special secondary tabulations according to the associated cause are made for deaths connected with anæsthetics, alcoholism and childbearing, and are included in this Review.

In Table 24 deaths are shown for the several geographical regions of the country, for urban and rural portions of administrative counties, and for county and metropolitan boroughs, arranged by sex, age, and the short list of causes as set out at the head of the table. The same information, though not by age, is also available for each individual administrative area.

In addition to the above tables, which relate exclusively to the year 1937, Table 6 contains a statement of the number of deaths registered in each year 1927–37 from each cause distinguished in Table 21 so far as available, with distinction of sex but not of age; while Table 7 states the corresponding crude death-rates per million living for persons, males and females, so far as these can be regarded as of any significance, no rates being shown for causes which give a rate of less than five per million population. But the crude rates in Table 7 are liable to be misleading as indices of the progress of mortality even where their numerical basis is adequate. Owing to the rapid ageing of the population at the present time as a result of simultaneous fall in birth and death-rates the rates shown in Table 7 for causes mainly affecting old people tend automatically to increase, and thus to overstate mortality from such causes as cancer, cerebral hæmorrhage and heart disease. As this overstatement has become seriously misleading in many cases, Table 8 is inserted to correct it by showing the course of mortality from each cause dealt with when allowance is made for such population changes by standardization (*see* page 10). Owing to the clerical labour involved in the preparation of these rates the list of causes in Table 8 is much shorter than that in Table 7, and rates are shown only for males and females separately. Standardized rates for both sexes jointly are given for a few causes in Table 9. Tables Nos. 11 and 12 state the mortality during the eleven years 1927–37 of infants under one year of age from the causes of chief importance at that age, but without distinction of sex.

1, 2. **Typhoid and Paratyphoid Fevers.**—The number of deaths classified to this heading during 1937 was 206. Of these, 53 were ascribed to paratyphoid infection, forming 26 per cent. of the total compared with 16 per cent. in the period of 5 preceding years.

The standardized rate corresponding to these deaths, 5 per million persons living (Table 9), compares with rates of 4, 4 and 6 in 1934, 1935 and 1936, the first two being the lowest recorded. This

rate is quite trifling compared with those of earlier years, the rate for 1871–75 for instance, having been 371 per million, or over 70 times that for 1937.

The distribution of this mortality throughout the country is outlined in Table XLI.

Table XLI.—Typhoid and Paratyphoid Fevers; Mortality, Prevalence and Fatality at all ages. Measles and Whooping Cough; Mortality at ages under five years, and Proportion of Deaths occurring in the First One or Two Years of Life, 1937.

	Typhoid and Paratyphoid Fevers.			Measles.		Whooping Cough.	
	Deaths per million living.	Cases† per million living.	Deaths per 1,000 cases notified.	Deaths per 100,000 living at 0–5.	Deaths at 0–2 per cent. of those at all ages.	Deaths per 100,000 living at 0–5.	Deaths at 0–1 per cent. of those at all ages.
England and Wales	5	52	96	32	57	60	49
South-East	6	75	84	10	40	56	53
Greater London ..	8	96	86	8	48	63	56
Remainder of South-East ..	3	42	79	13	35	46	48
North	5	47	98	45	63	70	48
North I	5	37	123	44	61	68	55
,, II	5	44	123	68	69	65	35
,, III ..	3	28	103	21	63	53	44
,, IV ..	5	61	88	52	63	82	49
Midland	2	27	83	51	57	52	44
Midland I ..	1	23	65	53	58	56	44
,, II ..	4	35	106	45	55	43	42
East	5	48	114	24	36	54	49
South-West ..	10	46	208	7	54	49	50
Wales	4	37	110	48	64	60	51
Wales I	5	41	123	61	66	57	50
,, II	1	26	56	11	43	70	53
County boroughs* ..	4	45	96	57	62	68	46
Other urban districts*	4	36	112	29	58	54	49
Rural districts* ..	4	42	99	17	40	51	48
Greater London :—							
Admin. County ..	4	57	73	8	46	95	61
Outer Ring ..	12	131	90	7	50	38	46

* Excluding Greater London. † Including cases in Port Health Districts.

The highest mortality rate in 1937 for any region was that for the South-West with 20 deaths and Greater London with 71 deaths. Of the latter total 35 were in Croydon and resulted for the most part from an epidemic which commenced in October and continued until February of 1938.

Wales II and Midland I show the lowest rates. Excess of mortality in the small towns had been the general rule during the twenty years preceding 1933, but in the last five years this has no longer been true.

The highest mortality rates recorded in Table 10 are for administrative counties of over 100,000 population, 18 in Norfolk and 15 in Cumberland and Northumberland. The county boroughs with highest rates are Croydon (144) and Exeter (72).

The fatality rate of 96 per 1,000 notified cases was the lowest recorded (Table XLII). Its variation throughout the various regions in 1937 is shown in Table XLI.

Table XLII.—Fatality of certain Infectious Diseases (Deaths per 1,000 Notified Cases), 1911–37.*

Year.	1. Enteric (typhoid and para-typhoid) fever.	6. Small-pox.	8. Scarlet fever.	10. Diphtheria.	15. Erysipelas.	16. Poliomyelitis (including polioencephalitis).	17. Encephalitis lethargica.	18. Cerebro-spinal fever (meningococcal meningitis).
1911	174	78·0	18·1	103	39	?	?	?
1912	191	73·2	18·6	96	39	?	?	?
1913	182	87·0	16·1	88	35	283	?	1,089
1914	194	61·5	17·2	99	42	348	?	1,257
1915	199	141·3	18·6	107	46	331	?	630
1916	174	113·2	17·8	101	39	270	?	656
1917	205	333·3	15·3	100	43	469	?	663
1918	201	30·8	20·5	106	47	1,004	?	673
1919	147	77·6	14·7	90	42	297	533	727
1920	171	114·1	12·0	81	52	404	539	911
1921	158	15·9	9·5	72	55	314	493	1,007
1922	191	27·7	12·7	78	53	352	742	1,047
1923	140	2·8	11·6	68	50	185	517	934
1924	120	3·5	10·5	60	52	183	279	746
1925	139	1·7	10·8	58	57	370	520	876
1926	133	1·8	8·3	59	55	181	583	926
1927	103	3·2	6·8	52	56	203	713	911
1928	124	4·3	5·7	52	55	306	819	1,061
1929	133	3·6	6·0	55	58	263	999	882
1930	106	2·4	6·7	47	56	212	1,241	938
1931	110	1·6	6·6	53	66	247	1,471	650
1932	101	1·5	6·2	54	68	237	1,463	568
1933	126	3·2	5·6	56	66	253	1,887	556
1934	131	33·5	6·3	59	71	201	1,917	666
1935	99	—	4·8	54	63	229	2,550	699
1936	103	—	4·7	53	60	175	2,550	639
1937	96	—	3·6	48	38	176	3,456	612

* The rates in this table are given with reserve, being in some respects unsatisfactory. For the years 1911–13 cases of disease among non-civilians have been excluded from the notification returns, but it has not been possible to distinguish their deaths; for the years 1920–1925 inclusive both cases and deaths relate to civilians only; for all other years the figures relate to the total population.

The numbers relating to small-pox in some years are too small to yield significant rates, but their basis of fact can be ascertained from Tables 6 and 28, and the rates quoted serve to bring out the extremely mild type of disease prevalent since 1920. The rates for poliomyelitis include polioencephalitis, which was not distinguished in the notification returns until 1919. The extraordinary rise in 1918 is partly ascribable to certification of a number of deaths from the then "new disease," encephalitis lethargica, as polioencephalitis, but mainly to a reduction in notifications unaccompanied by significant change in the number of deaths (*see* Report for 1918). The rates from this disease will be found to differ from some of those published in the Annual Reports of the Chief Medical Officer of the Ministry of Health, partly because polioencephalitis is included throughout and partly because special inquiries made by the Ministry in certain years have led to revision of the returns for those years, not embodied in Table XLII. The cases there referred to are similar for each year dealt with, being in all cases derived from the published notification returns. The latter source of discrepancy applies also to cerebro-spinal fever, and in this case there is a possibility that some cases of posterior basal meningitis may not have been notified as cerebro-spinal fever though all such deaths are included in the table.

Prevalence was highest in Greater London and lowest in Midland I. The proportion of paratyphoid to total notifications ranged from 32·3 in the South-West to 37·3 in the South-East, 39·6 in Wales, 47·9 per cent. in the Midlands, 57·8 in the North and 58·0 in the East.

6. **Small-pox.**—No deaths were allocated to this cause during 1937, this being the third year in succession in which no death was recorded. The mortality record for this disease is contained in Table 9, which shows that the standardized rate was less than 0·5 per million, indicated by 0 in the table, in eighteen other years since the 1901–05 epidemic. In the remaining eleven of these years the rate has been one per million.

Four cases of small-pox were notified (2 in Failsworth U.D., 1 in Hyde M.B. and 1 in Ripley U.D.) compared with 12 in 1936, 1 in 1935, 179 in 1934, 631 in 1933 and 2,039 in 1932.

7. **Measles.**—The deaths registered from this cause numbered 1,051 corresponding to a mortality of 26 per million population. But allowance for decreased proportion of children in the present population increases the rate on standardization from 28 to 44 for males and from 23 to 39 for females. The death-rate for children under 15 years of age, 114 per million, is seen from Table 9 to be the lowest recorded.

Measles is most commonly certified in conjunction with some respiratory or other complication over which it is given high preference by the selective rules. Classification in accordance with the physician's choice of essential cause would reduce the deaths assigned to measles from 1,051 to 974.

The distribution throughout the country of mortality from measles is stated in Table XLI in the form of death-rates per 100,000 living at ages 0–5. Deaths at these ages in 1937 formed 84 per cent. of the total, and statement of mortality at these ages prevents the comparison being prejudiced by varying proportions of children in the populations compared. The region showing the highest rate was North II.

The Table also demonstrates to what an extent measles mortality is enhanced by urban conditions, the county borough rate of 57 being more than 3 times that in the rural districts, a similar gradation with urbanisation having been evident in each of the 27 years for which the facts are available. The proportion of deaths which occurred at ages under 2 years was 40 per cent. in the rural districts and 62 per cent. in the county boroughs, being lowest in the South-East outside Greater London and the East.

The relations of measles mortality at ages under 5 to latitude and to overcrowding were demonstrated in the Review for 1934 (Table XXXVII), where the average rates during 1921–34 for the county boroughs were found to increase very greatly with the overcrowding rate in each zone of latitude, but were not greatly affected by northerliness of situation when towns with similar indices of

overcrowding were compared. The large effect of the parents' social class on mortality at 1–2 years was shown in Table XXI of the Review for 1936.

Table 10 shows that, of administrative counties with over 100,000 population, Oxfordshire returned the highest death-rate at all ages in 1937, 90 per million, Suffolk East with 63 following next. The highest county borough rates were—Dudley, 180, Liverpool, 136 and Kingston-upon-Hull, 128.

8. **Scarlet Fever.**—Deaths registered from this cause numbered 349 compared with 495 in 1936 and with 573 in 1935. Scarlet fever is sometimes certified as merely a contributory cause of death, and classification of multiple-cause deaths according to the physician's choice of essential cause rather than by selective rules would reduce the deaths assigned to scarlet fever from 349 to 305.

The death rate at ages under 15, 31 per million living, was the lowest ever recorded. The progress of the decline from the maximum decennial rate of 1861–70 (Table 9) may be traced in the following statement of proportionate figures for subsequent periods, taking the rate of 2,617 in that decade as 1,000—1871–80, 729; 1881–90, 345; 1891–1900, 168; 1901–10, 119; 1911–20, 54; 1921–30, 28; 1931–35, 22; 1936, 16; 1937, 12. The records of individual years since 1881 indicate that, ignoring increases which were not maintained over at least two years, the downward trend has been interrupted by short periods of rising rates, such periods being 1888–90, 1891–93, 1898–1902, 1911–14, 1917–20, 1928–30 and 1932–34. Save in 1934 each successive maximum has been lower than the preceding one. Prevalence as measured by the notification rate decreased by 9 per cent. in 1937 compared with the preceding year.

Table XLII shows that the fatality ratio of deaths to notified cases was 3·6 in 1937 compared with a mean rate of 5·5 per 1,000 cases notified in the preceding five years and 17·7 at the commencement of the record in the quinquennium 1911–15.

The distribution of the disease according to urbanisation and geographical location is given in Table XLIII. Decreased prevalence compared with 1936 is recorded in every region except North II, North IV and Wales I. The notification rate was greatest in Wales I and North I, and was lowest in the South-West, and it showed as usual an increase with urbanisation, from 176 in the rural districts to 272 in the county boroughs. The fatality ratios were lowest in North IV and Wales I and highest in North I.

Children under 5 provided 44 per cent. of the deaths, compared with 40 in 1936, 41 in 1935, 42 in 1934, 44 in 1933 and 46 in 1932. The death-rates per million living at different age periods under 20 in recent years have been as follows :—

Ages.	1921–25.	1926–30.	1931–35.	1936.	1937.
0– ..	154	87	98	71	54
5– ..	93	59	60	49	31
10– ..	30	19	19	14	9
15–20 ..	15	8	10	7	6

Table 10 shows that, amongst administrative counties with over 100,000 population, mortality was highest in Durham and Leicestershire (23 deaths per million).

The highest rates amongst the county boroughs (average 8) were those of Sunderland (33), Walsall and Doncaster (28).

Table XLIII.—Scarlet Fever and Diphtheria, 1937 : Mortality at Ages under 15 Years, Prevalence and Fatality at All Ages.

	Scarlet Fever.				Diphtheria.		
	Deaths per million living at 0–15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases notified.	Deaths at 0–5 per 100 at all ages.	Deaths per million living at 0–15.	Cases per 100,000 living at all ages.	Deaths per 1,000 cases notified.
England and Wales ..	31	233†	3·6	44	310	149	48
South-East	28	204	3·6	37	189	113	36
Greater London ..	29	227	3·4	45	216	143	32
Remainder of South-East	27	169	3·9	24	148	68	49
North	34	280	3·3	52	490	211	56
North I	55	325	5·6	43	609	265	64
,, II	39	286	3·5	69	390	134	73
,, III	25	270	2·8	42	395	198	47
,, IV	27	269	2·6	61	516	215	54
Midland	33	228	4·6	40	282	139	50
Midland I	37	220	4·9	47	303	148	51
,, II	26	244	4·0	25	241	123	49
East	20	168	3·5	27	115	63	42
South-West	22	133	4·7	39	140	50	63
Wales	35	301	3·1	52	342	212	42
Wales I	31	327	2·6	53	278	206	36
,, II	47	232	5·0	50	534	227	57
County boroughs* ..	29	272	2·9	53	413	195	49
Other urban districts*	35	231	4·1	38	321	137	55
Rural districts* ..	28	176	5·0	38	214	98	56
Greater London :—							
Admin. County ..	30	209	3·9	42	259	193	27
Outer Ring ..	28	244	3·1	47	181	98	41

* Excluding Greater London. † Including Port Health Districts.

9. **Whooping Cough.**—The deaths allocated to this heading numbered 1,750 (799 males and 951 females) compared with 2,090 in 1936. Classification of deaths attributed to whooping cough in combination with some other cause in accordance with the physician's choice of essential cause rather than by selective rules would reduce the total deaths assigned to whooping cough from 1,750 to 1,583. The excess for females is shown by Table 6 to be a constant feature of this disease, and it tends to increase with age. The percentage ratios of the numbers of female deaths to male deaths in 1937 are

113 at 0–3 months, 99 at 3–6 months, 112 at 6–12 months, and 145, 130 and 104 in the second, third and fourth years of life respectively, the ratios between the death-rates being slightly higher owing to the excess of males at risk at these ages. An increasing female excess after 3–6 months has been usually noticed in the records of the last four decades.

The standardized death-rates of 64 for males and 78 for females are the lowest recorded save in 1935. The death-rate per million living at ages under 15 reached a maximum of 1,511 for the five years 1866–70, after which, with a single exception, the quinquennial rates have progressively declined to 239 in 1931–35. In 1936 the rate was 228 and in 1937 it was 195 (Table 9).

The distribution of mortality at ages under 5 and the proportion of deaths under 1 year of age are given in Table XLI. The average rates during the quinquennial periods 1926–30 and 1931–35 and the rates in 1936 and 1937 at ages under 5 are :—

	London.	County boroughs.*	Other Urban districts.*	Rural districts.*
1926–30 ..	130	133	106	90
1931–35 ..	97	93	65	56
1936 ..	105	85	63	55
1937 ..	95	68	54	51

* Outside Greater London from 1931 onwards.

North IV registered the highest mortality and Midland II and the South-East outside Greater London the lowest.

The proportion of deaths at ages under 1 year was 49 per cent. compared with 45, 48, 44, 44 and 51 in the preceding five years.

It was shown in the Review for 1934 (Table XXXIX) that when the county boroughs were grouped according to the zone of latitude in which they are situated and the rate of overcrowding, as recorded at 1931 census, the average mortality at ages under 5 during the 14 years 1921–34 increased step by step with the overcrowding rate in the southern towns (50°–52°), and a similar increase was noticeable amongst towns in the most northerly counties (54°–55°), and it was concluded that overcrowding or the unsatisfactory social and economic conditions which are responsible for it, are in general more important in their effects on urban mortality from whooping cough than is northerliness of situation in England and Wales. The very large variation of mortality at ages under 2 according to the social class of the parent was shown in Table XXI of the Review for 1936.

10. **Diphtheria.**—The 2,963 deaths in 1937 include 1,382 males and 1,581 females. A female excess is shown also by the standardized

death-rates (Table 8), as in each year since 1919 except 1922 and 1931, but the crude death-rate (Table 7) has usually been higher for males, though this was not the case in 1937. For 1937 the crude rates were 70 per million for males and 74 for females, and the standardized rates 100 for males and 114 for females. Classification of multiple cause deaths according to the physician's choice of essential cause rather than by selective rules would reduce the deaths assigned to diphtheria from 2,963 to 2,897.

The history of diphtheria mortality is best expressed by the death-rate from diphtheria and croup at ages under 15 in Table 9, for during last century much diphtheria was evidently returned as croup, and the larger proportional child population in itself tended to produce a higher crude death-rate at all ages. In 1861–65 this rate was 1,422 per million, but fell to 891 in the next quinquennium, and the 5-yearly rates then showed only slight fluctuations until the end of the century, when a decline again set in to 310 in 1921–25. This has been followed by another stationary period, the rate in 1926–30 being 301, in 1931–35, 300, in 1936, 318 and in 1937, 310. (Table 9.)

The quinquennial death rates from 1906 to 1920 and annual rates in each year since 1921 at different ages are shown in Table XLIV, and rates for each separate year from 1901 to 1920 were given in Table XL of the Review for 1934. These rates show a much greater proportionate decline in infancy and the pre-school ages than in later childhood. The rates of 1937 expressed as percentages of the rates in 1906–10 were 43, 27, 47, 51 and 65 for the first 5 years of life, and 87 at ages 5–10. The mortality amongst infants under 1 year reached the low rate of 12 per 100,000 live births in 1932–35, increasing to 14 in 1936 and falling again to 13 in 1937. In the third year of life the 1937 rate was lower than in the previous year and the same was true at ages 5–10, but slight increases were recorded in the second, fourth and fifth years of life.

At ages 5–10 the rates during the seven successive quinquennial periods from 1901–05 to 1931–35 have been 62, 52, 51, 53, 37, 37 and 42. The excessive rate of 61 recorded at this age in 1934 declined to 45 by 1937. At 10–15 there has been no consistent change since 1901.

At ages 1–5 diphtheria ranked 3rd in order of numerical importance as a cause of death in 1937, the first 6 causes with their numbers of deaths being :—

Pneumonia, 3,095; Tuberculosis, 1,058; Diphtheria, 1,031; Violent causes, 958; Whooping-cough, 812; Measles, 649.

At ages 5–10 diphtheria, although it must now be regarded as a preventable disease, is by far the most important cause of death,

the first 6 causes in 1937, in order of the numbers of deaths classed to them being :—

Diphtheria, 1,310; Violent causes, 780; Tuberculosis, 473; Pneumonia, 443; Appendicitis, 218; Heart diseases, 189.

At ages 10–15 diphtheria ranked 3rd in 1937, the first 6 causes being :—

Tuberculosis, 576; Violent causes, 507; Diphtheria, 348; Heart diseases, 333; Pneumonia, 199; Appendicitis, 196.

It may well be asked why, if diphtheria can be virtually eliminated by preventive inoculation of the child population on a large

Table XLIV.—Diphtheria and Croup Mortality—1906–1937.

Year.	Deaths per 100,000 live births.	Deaths per 100,000 living.							
	Age 0–	1–	2–	3–	4–	5–	10–	15–	25 and up.
1906–10 ..	30	84	90	106	103	52	8	1	1
1911–15 ..	25	69	76	91	91	51	10	1	0
1916–20 ..	24	67	79	93	95	53	11	2	0
1921 ..	23	62	73	96	89	54	13	2	1
1922 ..	25	68	70	78	75	41	11	1	0
1923 ..	16	39	46	51	51	28	7	1	0
1924 ..	15	36	44	49	47	25	5	1	0
1925 ..	17	40	41	50	59	31	6	1	0
1926 ..	18	43	44	48	54	37	6	1	0
1927 ..	17	40	42	47	51	31	7	1	0
1928 ..	21	47	46	49	59	37	8	1	1
1929 ..	22	44	53	58	58	39	10	2	1
1930 ..	19	49	53	58	61	41	12	1	1
1931 ..	16	32	38	51	49	32	9	1	1
1932 ..	12	25	35	44	51	30	7	1	0
1933 ..	12	23	37	43	55	38	9	1	0
1934 ..	12	35	51	80	75	61	13	2	1
1935 ..	12	29	47	63	71	52	13	2	1
1936 ..	14	21	45	53	66	48	10	1	0
1937 ..	13	23	42	54	67	45	11	1	0
	Rates per cent. of that at 5–10 years								
1906–10 ..	—	162	173	204	198	100	15	2	1
1911–15 ..	—	135	149	178	178	100	20	2	1
1916–20 ..	—	126	149	175	179	100	21	4	1
1921–25 ..	—	135	146	168	170	100	22	3	1
1926–30 ..	—	119	127	141	154	100	24	3	1
1931–35 ..	—	69	98	133	143	100	24	2	1

enough scale, these deaths and the suffering endured by the 60,000 children annually notified as ill with diphtheria continue to be tolerated by public opinion.

There has been a progressive shifting of mortality risks towards the school age, so that whereas 30 years ago the danger at ages 1–5 was double that at 5–10, the rates in terms of that at 5–10 were in 1931–35 only 69 per cent. at 1–2, 98 at 2–3, 133 at 3–4 and 143 at 4–5.

Table XLIII shows that diphtheria mortality was highest in North I and Wales II, and lowest in the East and South-West. For the country as a whole, outside London, the rate increased regularly with urbanisation, but the London rate was comparatively low. It seems probable that diphtheria is still much more freely notified in some sections of the population than in others. Thus the average notification rate in the 10 years 1928–37 in Bolton was 53 and the average fatality ratio 80, but in Cardiff a much higher average notification rate of 241 was accompanied by a lower average fatality ratio of 39, this being suggestive of more complete notification in the latter town.

Table XLV shows the trend, over a series of years, of prevalence and fatality indices in London, in each county borough having a population exceeding 150,000 in 1931, and in the residue of each region surrounding these towns. Although local differences in the standard of notification of diphtheria may affect comparison of local rates in a given year, this factor is not likely to affect comparisons of the trend of prevalence or fatality in one town with the corresponding trend during the same period in another town. There are consistent differences apparent over periods of years, both as regards prevalence and fatality, between towns of similar size and situation, such as Manchester and Liverpool, or Leeds and Sheffield.

In London, Croydon, West Ham, Leeds, Birkenhead, Liverpool, Leicester and Cardiff the downward trend of notification rates noticed from 1934 to 1936 gave place to increases in 1937, but in Salford and Bristol the decline continued. In Manchester, Birmingham and Stoke-on-Trent the upward trend of notification rates in progress from 1933 or earlier until 1936 continued in 1937, but in Newcastle, Sunderland, Sheffield, Coventry and Nottingham it was checked. Southampton, Kingston-on-Hull and Plymouth showed decreases in 1937 and Portsmouth, Bolton and Swansea showed increases.

Table XLV also shows that the year 1934 was characterized by the highest ratios of deaths to notified cases in England and Wales recorded in any of the 10 years 1928–37 and this was also true of London and Birmingham but not of the other large towns in the table. Some indication of the local changes in the severity of diphtheria during recent years can be obtained by comparing the averages of the annual ratios of deaths per 1,000 notified cases in

Table XLV.—Diphtheria prevalence and fatality rates in Certain Large Towns and Regions, 1928 to 1937.

	Notified Cases per 100,000 living.										Deaths per 1,000 Notified Cases.									
	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
England and Wales	155	159	184	126	108	118	170	160	142	149	52	55	47	53	54	56	59	54	53	48
South-East :— London Admin. County ..	275	268	303	195	188	225	281	225	172	193	33	30	34	31	38	37	40	29	32	27
Croydon C.B.	223	194	169	90	48	91	181	128	76	121	66	53	39	(24)	96	78	57	39	(43)	51
Portsmouth C.B.	360	317	255	151	97	77	136	169	97	121	61	33	27	35	(8)	(46)	86	92	(33)	42
Southampton C.B.	194	214	232	122	119	161	419	444	196	151	58	68	69	60	(9)	(31)	28	47	34	37
West Ham C.B.	342	265	282	120	105	182	291	285	176	194	32	48	40	31	40	105	61	51	32	36
Remainder of South-East ..	161	156	168	102	65	74	124	108	77	75	57	59	47	50	51	56	59	53	52	46
North I :— Newcastle-on-Tyne C.B. ..	96	95	78	42	55	33	137	236	243	171	(30)	48	(18)	(51)	(32)	(96)	61	48	50	44
Sunderland C.B.	104	79	144	90	61	39	82	181	222	156	(11)	(62)	49	65	(44)	(41)	78	96	73	73
Remainder of North I ..	132	121	119	65	49	81	172	259	267	292	62	63	56	63	42	51	69	67	61	65
North II :— Kingston-upon-Hull C.B. ..	225	279	280	361	534	473	333	300	347	263	31	44	54	82	78	60	60	34	110	69
Remainder of North II ..	82	64	80	69	42	63	151	111	98	92	42	75	62	69	83	96	109	96	68	76
North III :— Bradford C.B.	97	139	117	82	106	129	288	318	307	301	68	122	55	(36)	45	39	52	62	58	55
Leeds C.B.	133	110	207	203	183	216	455	278	166	191	33	47	54	88	54	83	70	44	43	47
Sheffield C.B.	159	146	134	80	79	189	272	338	390	315	40	45	29	(14)	(15)	20	30	42	43	26
Remainder of North III ..	98	99	116	115	136	150	234	208	155	158	65	68	71	90	75	78	79	67	66	56
North IV :— Birkenhead C.B.	90	67	167	152	172	241	472	288	197	419	(42)	(29)	103	102	39	41	38	33	58	41
Bolton C.B.	61	40	45	25	24	60	54	57	39	130	153	(110)	(37)	(45)	(71)	(56)	116	(50)	(59)	104
Liverpool C.B.	218	267	462	375	384	340	338	314	264	293	52	58	59	59	56	60	61	55	62	61
Manchester C.B.	158	120	137	95	140	134	169	174	222	256	79	63	55	82	76	85	65	46	55	47
Salford C.B.	173	288	317	257	329	350	414	329	289	263	24	56	41	53	30	30	30	51	50	23
Remainder of North IV ..	99	113	124	98	91	96	155	155	184	185	68	67	63	68	77	69	74	66	56	55
Midland I :— Birmingham C.B.	218	238	235	178	117	83	156	165	160	202	33	36	37	35	30	38	53	50	39	39
Bristol C.B.	153	289	369	207	134	157	182	153	107	76	28	57	27	37	41	34	23	17	34	32
Coventry C.B.	162	265	293	114	64	81	108	132	142	124	168	88	85	57	(27)	74	65	52	58	(28)
Stoke-on-Trent C.B.	111	97	91	75	59	85	104	144	141	176	(19)	40	39	81	(31)	(30)	(21)	33	47	67
Remainder of Midland I ..	112	126	148	101	64	61	116	137	120	137	71	61	49	57	62	55	63	67	60	58
Midland II :— Leicester C.B.	188	104	83	47	32	140	192	166	104	174	41	51	(30)	(53)	(92)	38	43	(19)	(26)	44
Nottingham C.B.	346	259	255	99	51	56	76	107	144	83	47	83	50	(15)	(66)	(38)	(28)	47	34	(30)
Remainder of Midland II ..	115	116	155	80	59	58	72	90	91	122	65	74	50	58	65	54	56	73	74	52
East	133	126	107	86	78	69	66	68	53	63	51	64	59	67	64	65	72	58	53	42
South-West :— Plymouth C.B.	217	264	318	191	212	165	186	238	221	129	76	48	37	46	45	53	45	48	88	66
Remainder of South-West ..	81	113	159	82	66	63	70	72	53	41	59	69	56	51	52	61	55	50	66	62
Wales I :— Cardiff C.B.	248	328	321	264	221	215	235	158	155	267	28	41	40	41	20	40	40	54	50	34
Swansea C.B.	239	266	290	289	190	172	200	220	194	271	41	39	23	23	(29)	(32)	(24)	(22)	44	55
Remainder of Wales I ..	163	179	238	163	136	144	215	163	143	189	70	71	52	57	62	72	82	67	50	34
Wales II	93	107	234	229	165	153	165	132	176	227	74	70	54	51	56	59	57	50	44	57

NOTE.—In London, notifications are transferred to the area of residence, but this is not the case in other towns.

NOTE.—Rates in parentheses are founded upon less than 10 deaths.

the 15 large towns with over 250,000 population in 1937 in the 3 periods 1928–30, 1931–34 and 1935–7 as given below :—

	Notified cases per 100,000 living (averages of annual rates)			Deaths per 1,000 Notified cases (averages of annual ratios)		
	1928–30.	1931–34.	1935–37.	1928–30.	1931–34.	1935–37.
England and Wales	166	131	150	51	55	52
Towns with greatly increased prevalence in 1935–37.						
Bradford	118	151	309	82	43	58
Manchester	138	135	217	66	77	49
Newcastle-on-Tyne	90	67	217	32	60	47
Sheffield	146	155	348	38	20	37
Stoke-on-Trent	100	81	154	33	41	49
Towns with slightly increased prevalence in 1935–37.						
Birmingham	230	134	176	35	39	43
Leicester	125	103	148	41	56	30
Nottingham	287	71	111	60	37	37
Portsmouth	301	115	129	40	44	56
West Ham	296	174	218	40	59	40
Towns with decreased prevalence in 1935–37.						
Bristol	270	170	112	37	34	28
Kingston-upon-Hull	261	425	303	43	70	71
Leeds	150	264	212	45	74	45
Liverpool	316	359	290	56	59	59
London	282	222	197	32	36	29

In the country as a whole and in London and Liverpool there was no important change in the fatality ratio during the 10 years; in Birmingham, Kingston-upon-Hull, Portsmouth and Stoke there have been increases in the ratio and in Bristol and Nottingham there have been decreases, whilst the remaining towns of this size have shown considerable fluctuations without any consistent trend. It may be noted that of the 5 towns where diphtheria prevalence increased greatly in 1935–37 three recorded a rise in the fatality ratio and two showed a fall, the other towns except Portsmouth showing little change or a fall in the ratio. This is difficult of explanation unless large variations occur from time to time in the proportions of the virulent and mild types of the disease in local epidemics.

Table 10 shows that the counties, with over 100,000 population, having the highest mortality in 1937 were Denbigh (293 per million) and Durham (261). The highest rates among county boroughs (average 95) were those for Wigan and Worcester (264).

11. **Influenza.**—The deaths assigned to this cause numbered 18,635, 8,991 of males and 9,644 of females. The resultant crude

mortality rate of 454 per million is reduced on standardization, by allowance for the increased age of the population, to 318, higher standardized rates than this having been recorded only in the years 1900, 1918–19, 1922, 1924, 1927, 1929 and 1933 in the present century (Table 9).

Influenza is sometimes certified as a contributory rather than a primary cause of death, and on the other hand the physician may regard it as more important than an associated cause such as cancer to which the selective rules give preference. Classification of multiple cause deaths according to the physician's order of statement rather than by rules would reduce the total deaths assigned to influenza from 18,635 to 16,958.

Table XLVI.—Influenza Mortality per million Population during the first 3 and last 9 months of each Year, 1921-37.

—	January–March.	April–December.
1921	356	198
1922	1,854	133
1923	240	214
1924	1,322	213
1925	783	175
1926	298	206
1927	1,827	147
1928	332	152
1929	2,450	173
1930	225	94
1931	958	167
1932	926	133
1933	1,995	97
1934	271	96
1935	285	148
1936	288	102
1937	1,556	94

Mortality in the March quarter of 1937 was 1,556 per million, this being a crude rate. As Table XLVI indicates, mortality in the latter nine months of the year has been subject to much slighter annual fluctuation than that in the first quarter.

The distribution of influenza mortality throughout the country is indicated in Table XLVII.

The highest regional rate is that for Wales II, as was the case in the three preceding years, and the lowest rate is that of Wales I. Mortality generally was highest in the rural districts, decreasing with urbanisation. In these respects the behaviour of influenza contrasts with the incidence of the epidemic diseases of childhood which follow an almost constant rule of increase with urbanisation. In 21 of the 27 years, 1911–37, for which comparison is possible, the

highest mortality from influenza has been recorded in the rural districts.

Table XLVII.—Influenza ; Mortality. Encephalitis Lethargica and Cerebro-spinal Fever ; Mortality, Prevalence and Fatality, 1937.

	Influenza.	Encephalitis Lethargica.			Cerebro-spinal Fever.		
	Deaths per Million Living.	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified	Deaths per Million Living.	Cases per Million Living.	Deaths per 100 Cases Notified
England and Wales..	454	18	5†	346	17	28†	61
South-East	396	12	3	407	13	24	57
Greater London ..	365	12	3	464	17	31	55
Remainder of South-East	444	12	3	345	8	13	61
North..	487	25	6	418	23	37	61
North I	458	25	3	800	19	29	67
,, II	516	9	6	150	18	20	88
,, III	493	17	3	500	19	31	62
,, IV	489	33	8	388	27	47	57
Midland	474	17	7	253	18	30	61
Midland I	464	18	8	218	21	34	61
,, II ..	494	16	4	390	14	23	60
East	452	19	7	269	10	6	164
South-West	553	21	8	253	11	14	77
Wales..	475	19	6	336	13	20	66
Wales I	364	17	5	344	13	25	55
,, II	767	23	7	320	13	9	150
County boroughs* ..	427	22	6	331	23	42	55
Other urban districts*	495	21	6	347	14	21	69
Rural districts* ..	538	16	5	332	10	11	96
Greater London { Admin. Co.	404	13	2	540	22	45	48
Greater London { Outer Ring	330	11	3	400	12	17	73

* Excluding Greater London. † Including Port Health Districts.

13. **Dysentery.**—The deaths attributed to these diseases numbered 139 compared with 87 in 1936 and notified cases increased to 4,167 compared with 1,333. The number of notified cases was the highest recorded in any year since the dysenteries were made notifiable. The deaths assigned to each subhead of dysentery in the International List, and the total notified cases, in each year from 1921 to 1937 and in each quarter of 1936, 1937 and the first half of 1938 are given in Table XLVIII.

The annual deaths from dysentery not distinguished as amœbic declined from 250 in 1921 to 82 in 1927 and have fluctuated in succeeding years between 80 and 110 except in 1928 (142), 1932 (130) and 1937 (129). The notified cases which purport to comprise all forms, protozoal and bacillary, including the Sonne type, fell from

Table XLVIII.—Dysentery : Deaths and Notified Cases in 1921–1937.

Period.	No. of notified cases (all forms of dysentery).	No. of deaths registered in each year 1921–35 and occurring in each quarter of 1936–mid. 1938.					Ratio of notifications to deaths (all forms)
		Amœbic dysentery.	Bacillary dysentery.	Unspecified or other dysentery.	Total not specified as amœbic.	All forms.	
1921	1,223*	11	17	233	250	261	4·7
1922	789*	10	21	185	206	216	3·7
1923	484*	13	12	124	136	149	3·2
1924	388*	8	13	109	122	130	3·0
1925	345*	11	13	111	124	135	2·6
1926	565	14	11	117	128	142	4·0
1927	465	13	6	76	82	95	4·9
1928	728	13	37	105	142	155	4·7
1929	584	14	20	64	84	98	6·0
1930	565	6	42	49	91	97	5·8
1931	836	10	47	59	106	116	7·2
1932	924	3	53	77	130	133	6·9
1933	783	6	44	42	86	92	8·5
1934	763	9	44	50	94	103	7·4
1935	1,177	10	67	39	106	116	10·1
1936, 1st quarter ..	510	2	22	11	33	35	
2nd „ ..	266 } 1333	1 } 6	7 } 53	8 } 30	15 } 83	16 } 89	15·0
3rd „ ..	236	2	9	5	14	16	
4th „ ..	321	1	15	6	21	22	
1937, 1st „ ..	334	2	18	14	32	34	
2nd „ ..	306 } 4167	4 } 10	7 } 73	7 } 59	14 } 132	18 } 142	29·4
3rd „ ..	528	1	13	13	26	27	
4th „ ..	2999	3	35	25	60	63	
1938, 1st „ ..	2,549	2	33	13	46	48	} 42·1
2nd „ ..	653	2	17	9	26	28	

* The numbers of notified cases for the years 1921 to 1925 are not strictly comparable as they do not include non civilians, figures for these not being available. All the other figures in the table are inclusive of non civilians.

1,223 in 1921 to 789 in the next year and remained below 600 during the period 1923–30, except in 1928 (when the number of deaths was also high). In 1931–34 the annual notified cases rose to a somewhat higher level around 800 and then increased to 1,177 in 1935, 1,333 in 1936 and 4,167 in 1937. The ratio of notified cases to deaths amongst civilians declined year by year from 1921 to 1925, owing perhaps to a progressive neglect of notification as the disease diminished after the war, but since 1925 the ratio has steadily increased from less than 3 to over 29 in 1937 and 42 in the first half of 1938. Since the annual deaths have neither tended to increase nor decrease during the last 12 years, the consistent rise in notifications must be attributed in the main either to increased prevalence of or increased recognition of the mild forms of the disease such as the Sonne type. The suddenness of the great rise and fall during the autumn and winter of 1937–38 seems to preclude mere variations in recognition and to indicate a real increase in prevalence of mild dysentery, which was accompanied, as Table XLVIII shows, by a rise in the number of deaths in the December quarter of 1937.

Comparison between the age distributions of the deaths in the last 3 years shows that the increase in mortality in 1937 was chiefly of infants under 1 year and old people over 75.

		0–	1–	5–	15–	25–	45–	65–	75 up.	All ages.
Deaths in Nos. 13 b, c	1935	11	9	7	6	21	36	12	4	106
	1936	10	12	7	2	19	24	6	1	81
	1937	24	6	8	3	25	34	12	17	129

15. **Erysipelas.**—Deaths attributed to erysipelas numbered 581, 324 of males and 257 of females, corresponding to standardized death-rates of 13 per million for males and 9 for females. These rates attained their previous lowest level in 1923, 15 and 14 respectively, and then increased slowly to 25 and 20 in 1930–31, but in 1933 the rates rose sharply to 30 and 25, and again in 1934 to the high levels of 34 and 27, this being followed by a progressive fall in the last three years.

At ages under 5 the erysipelas death-rate per 100,000 living was 9 in 1896–1900, 8 in 1901–5, 6 in 1906–10, 4 in 1915–20, and 3 in 1923, but then rose to 10 in 1933, followed by a decline to 3 in 1937.

The notification rate, which rose from 32 per 100,000 in 1923 to 45 in 1929 and 1930 and then declined to 36 in 1932, reached the high level of 51 in 1934, but fell again to 37 in 1937 (Table 26). It was highest in the English county boroughs (47) and lowest in the Welsh rural districts (15). The mean annual rates of prevalence, as measured by notifications, in each county during the two periods 1921–24 and 1931–34 were compared in Table XLVI of the Review for 1934.

The changes in the ratio of deaths per 1,000 notifications in England and Wales since 1923 are shown below :—

	1923–27.	1928–32.	1933.	1934.	1935.	1936.	1937.
Mean annual deaths	755	991	1,191	1,458	1,060	987	581
Mean annual notifications	13,907	16,433	17,997	20,643	16,926	16,487	15,166
Deaths per 1,000 notifications ..	54	60	66	71	63	60	38

This fatality ratio reached a maximum in 1934 and fell considerably in 1937, partly perhaps on account of the introduction of more effective methods of treatment of streptococcal infections. In the first half of 1938 the ratio declined further to 30.

16. **Acute Poliomyelitis.**—Deaths, including those from acute polioencephalitis, numbered 152, compared with 102 in the preceding year. The standardized death rate was 6 per million for males and 3 per million for females. The cases notified were 768 of poliomyelitis and 95 of polioencephalitis.

The death-rate at ages under 15 was 8 per million. This rate ranged from 9 to 16 in each of the periods 1911–20 and 1921–30, and from 7 to 13 during 1931–36. The distributions of deaths according to age are compared in 1926–30 and in each of the last seven years, in Table XLIX.

17. **Encephalitis Lethargica.**—Deaths attributed to this disease numbered 750 (386 males and 364 females), yielding a standardized death-rate of 15 per million, compared with 14 in 1936 (Table 9). On many death certificates this disease is mentioned as a contributory rather than a direct cause of death and the high preference given to

it by the selective rules causes the deaths under this heading to considerably exceed those which are properly attributable to it. Classification according to the physician's choice of essential cause would reduce the number of deaths from 750 to 595. The 217 notifications of acute encephalitis lethargica (Table 28) show a decline for the thirteenth year in succession, and are considerably less than the deaths, yielding a fatality ratio of 3,456 deaths per 1,000 notifications, compared with 2,550 in 1936, 2,195 in 1935, 1,917 in 1934 and 279 in 1924.

Table XLIX.—Acute Poliomyelitis and Polioencephalitis deaths at various ages per cent. of all ages, 1926–1937.

Year.	Rate per million at 0–15.	No. of deaths (all ages).	Percentage at different ages.							
			0–	1–	5–	10–	15–	25–	45 & up.	All ages.
1926–30	12	888	8	32	17	11	18	9	5	100
1931	7	98	21	28	9	12	18	10	2	100
1932	13	178	6	27	20	15	16	11	5	100
1933	13	202	6	26	16	15	17	15	5	100
1934	9	135	4	21	19	16	15	15	10	100
1935	10	145	3	30	17	17	15	12	7	100
1936	7	102	4	26	13	21	17	12	8	100
1937	8	152	3	18	15	13	22	17	12	100

Table XLVII shows that mortality was highest in North IV whereas in London mortality and prevalence were, as usual, below the general average.

18. **Cerebro-spinal Fever** (*Meningococcal Meningitis*).—Deaths from this cause numbered 698. Of these 394 were of males and 304 of females, corresponding to standardized rates of 27 and 21 per million.

The female rate was appreciably above those of the preceding 3 years, the increase being chiefly at ages under 5, as Table L shows.

Notifications in 1937 numbered 1,140 (Table 28). The numbers in the preceding seven years were 674, 2,216, 2,136, 1.695, 1,094, 883 and 994. The fatality ratio was 61 per 100 cases, the ratios in the 7 years preceding being 94, 65, 57, 56, 67, 70 and 64. In times of high prevalence, when attention is directed to the disease, notification statistics probably furnish a more complete record of the total number of persons attacked than at other times.

Prevalence was greatest in January, February and May (Table 27), mortality being highest in January and February (Table 23).

Table L.—Cerebro-spinal Fever, 1911–37: Mortality at Various Ages per Million Living and per cent. of that in 1915–17.

Year.	Males.					Females.				
	All Ages*	0–5	5–15	15–25	25 and up*	All Ages*	0–5	5–15	15–25	25 and up*
	Mortality rate per million.									
1915–17†	69·8	148·2	45·3	135·3	35·2	31·6	122·7	36·5	24·8	10·5
1931	54·7	218·7	51·2	54·1	17·5	37·2	172·6	45·8	17·4	9·3
1932	46·4	209·6	36·0	42·6	13·6	31·8	153·0	31·5	16·3	9·5
1933	35·2	172·9	26·7	28·5	8·8	27·3	139·5	27·6	12·9	6·4
1934	28·5	135·3	23·8	22·0	7·8	19·8	107·3	17·9	7·7	4·7
1935	23·4	118·8	18·5	14·2	6·6	18·6	104·6	16·0	8·6	3·3
1936	25·6	133·5	17·0	17·7	6·8	18·4	106·0	16·4	7·3	3·0
1937	26·8	140·8	15·5	21·8	6·7	21·5	131·9	11·9	9·4	4·3
	Mortality rate per cent. of that in 1915–17.†									
1911–14†	17	43	26	4	5	31	45	24	16	14
1915–17†	100	100	100	100	100	100	100	100	100	100
1918	55	57	54	59	48	55	56	63	49	46
1919	39	64	49	28	24	51	56	52	46	39
1920	27	60	47	10	9	46	56	39	51	25
1921	21	52	28	5	11	36	50	28	28	21
1922	18	44	25	7	5	32	49	23	20	9
1923	13	31	19	3	6	27	32	27	29	11
1924	15	34	21	6	6	24	31	21	16	15
1925	18	44	29	6	4	29	39	26	19	14
1926	19	50	27	5	5	30	45	14	24	19
1927	24	63	30	6	8	34	44	37	19	18
1928	23	60	28	6	10	39	54	30	27	22
1929	33	83	38	14	11	50	71	45	27	18
1930	34	76	52	13	15	58	86	46	25	27
1931	78	148	113	40	50	118	141	125	70	89
1932	66	141	79	31	39	101	125	86	66	90
1933	50	117	59	21	25	86	114	76	52	61
1934	41	91	53	16	22	63	87	49	31	45
1935	34	80	41	10	19	59	85	44	35	31
1936	37	90	38	13	19	58	86	45	29	29
1937	38	95	34	16	19	68	107	33	38	41

* Standardized. † The rates used for 1911–14 and 1915–17 are mean annual rates for those years.

Table XLVII shows a higher death rate in the county boroughs than the rural districts, and in London than in the Outer Ring, and, as in the two preceding years, both mortality and prevalence increased in general from South to North, mortality being highest in North IV, followed by Midland I, and lowest in the South-East outside Greater London.

23–32. **Tuberculosis.**—The deaths assigned to tuberculous affections in the aggregate numbered 28,529—16,246 of males and 12,283 of females—261 more than those so classified in the previous year.

The standardized death-rate resulting from these figures, 657 per million persons (males 739, females 584), is the same as in the previous year, which was the lowest recorded (Table 9), being 30 per million below that of 1935. The male rate established a new low record, whilst the female rate was slightly above that of 1936.

An improvement on the preceding year was recorded, as Table LI shows, at ages 5–10, 20–25, 45–55 and over 75 for males, and at ages 5–10, 15–20, 45–65 and over 75 for females.

Table LI.—Mortality from Tuberculosis (All Forms) per Million Population, 1922–24, 1935, 1936 and 1937.

—	Males.				Females.				Persons.			
	1922–24	1935	1936	1937	1922–24	1935	1936	1937	1922–24	1935	1936	1937
All Ages { Crude	1,229	848	825	824	945	599	570	576	1,081	718	692	695
All Ages { Standardized	1,192	774	744	739	953	610	578	584	1,066	687	657	657
0–	1,181	539	520	553	977	451	476	482	1,080	496	498	518
5–	372	197	198	168	392	193	160	153	382	195	180	161
10–	337	151	148	149	530	231	207	212	433	190	177	180
15–	856	551	494	502	1,282	857	807	798	1,070	703	649	648
20–	1,568	993	946	888	1,523	1,211	1,164	1,174	1,544	1,104	1,057	1,033
25–	1,536	991	922	926	1,283	924	848	888	1,398	957	884	907
35–	1,736	1,129	1,053	1,071	1,033	630	594	597	1,359	861	807	819
45–	1,740	1,330	1,353	1,321	804	471	458	451	1,253	867	869	850
55–	1,505	1,234	1,281	1,288	683	428	417	415	1,073	805	819	820
65–	1,032	832	790	808	585	350	356	371	784	566	551	568
75 and up ..	403	353	398	371	353	228	252	244	372	276	309	293

In Table LII the mortality at each age in the year under review is expressed as a percentage of the corresponding mean annual rates in 1922–24 and 1932–34, and the percentage changes during the ten-year intervals from 1912–14 to 1922–24 and from 1922–24 to 1932–34 are also shown. If we use the mean rates of 1912–14, 1922–24 and 1932–34 as measures of the mortalities in 1913, 1923 and 1933 respectively and suppose that during each of the intervals 1913 to 1923, 1923 to 1933, 1933 to 1937, mortality at a given age was falling by a constant proportion each year, that is to say the mortality rate changed in each year during the interval by a constant proportion of that in the preceding year, the rates

Table LII.—Mortality from Tuberculosis in 1937, per cent. of that in 1922–24 and 1932–34.

	1922–24 per cent. of 1912–14.		1932–34 per cent. of 1922–24.		1937 per cent. of 1922–24.		1937 per cent. of 1932–34.	
	Males	Females	Males	Females	Males	Females	Males	Females
All Ages { Crude	78	81	77	72	67	61	87	85
All Ages { Standardized.	77	81	74	73	62	61	84	84
0–	57	57	61	62	47	49	76	80
5–	65	68	62	59	45	39	72	67
10–	75	77	58	50	44	40	76	80
15–	91	105	78	80	59	62	75	78
20–	104	110	74	86	57	77	76	90
25–	85	91	72	80	60	69	84	86
35–	79	75	72	70	62	58	86	82
45–	73	68	86	68	76	56	88	83
55–	68	71	86	67	86	61	100	90
65–	75	78	79	66	78	63	99	96
75 and up ...	69	80	89	68	92	69	103	101

of *annual* percentage change necessary to produce the results in Table LII were as follows :—

	Males.			Females.		
	1913 to 1923.	1923 to 1933.	1933 to 1937.	1913 to 1923.	1923 to 1933.	1933 to 1937.
All ages ..	−2·5	−2·6	−3·4	−2·1	−3·2	−4·0
0–	−5·5	−4·8	−6·6	−5·5	−4·7	−5·4
5–	−4·2	−4·7	−7·9	−3·8	−5·1	−9·5
10–	−2·8	−5·3	−6·6	−2·6	−6·7	−5·4
15–	−0·9	−2·5	−6·9	+0·5	−2·2	−6·0
20–	+0·4	−3·0	−6·6	+0·9	−1·5	−2·6
25–	−1·6	−3·2	−4·3	−0·9	−2·2	−3·7
35–	−2·3	−3·2	−3·7	−2·8	−3·5	−4·8
45–	−3·1	−1·5	−3·2	−3·8	−3·8	−4·6
55–	−3·8	−1·5	Nil	−3·4	−3·9	−2·6
65–	−2·8	−2·3	−0·3	−2·5	−4·1	−1·0
75 and up ..	−3·6	−1·2	+0·7	−2·2	−3·8	+0·2

The crude death rate at all ages for males declined by 2½ per cent. annually during the periods between 1913 and 1933, and in more recent years by 3½ per cent. annually, whilst for females the rate of fall increased from 2 per cent. annually in the first period to 4 per cent. in the third. For children aged 5–10 the annual rates of fall of about 5 per cent. between 1913 and 1933 have increased also in recent years. At ages 15–20 the first period registered no substantial changes but the second period showed an annual fall of about 2 per cent. for each sex, increasing to 6 or 7 per cent. in recent years. At 20–25 a rise in mortality rate occurred between 1913 and 1923, amounting to about one-half per cent. annually for males and 1 per cent. for females, giving place in the next 10 years to an annual fall of about 3 per cent. for males and 1½ per cent. for females, and in recent years to a more rapid fall of 6½ and 2½ per cent. per annum respectively. The rise or arrested fall of mortality at ages between 15 and 25 from 1913 to 1923 can be attributed to the immediate effects of food shortage in some of the intervening years on young adults.

At ages 25–35, as at 20–25, the rate of decline of female mortality was less rapid than for males between 1913 and 1933, but both have fallen by about 4 per cent. annually in more recent years. At 35–55 the female rate has fallen more rapidly than that of males ever since 1912–14. At every age between 5 and 45 the rate of decline was more rapid between 1923 and 1933 than during the preceding 10 years, and at every age up to 55 except for girls aged 10–15 the annual rate of decline was greater between 1933 and 1937 than during the preceding 10 years. At ages over 55 male mortality has not fallen since 1923 as rapidly as that of females.

The percentage changes in the standardized rate at all ages in successive decades since 1851–60 are shown in Table LIII; the decennial rate of fall ranged from 14 to 21 per cent. between 1871–80 and 1911–20, but has increased since then to about 30 per cent.

In Table L of the Review for 1935 were given, at separate age groups, the rates per million living from tuberculosis of all forms in decennial periods from 1851–60 to 1901–10 and in quinquennial periods from 1911–15 to 1931–35; and these may be supplemented by the rates at the corresponding age groups in 1936 and 1937 given in Table LI of this Review. Comparison of the 1937 rates with those for 1851–60 shows that the mortality of children under 5 has fallen to about one-eleventh of the rate in the middle of last century, and of children aged 5–15 to less than one-seventh. At 15–35, rates have declined to about one-fifth of those in 1851–60. At 35–65 male rates have fallen to a third or a quarter, and female rates to less than a sixth, whilst at ages over 65 mortality of each sex has declined to a third or less of the 1851–60 levels.

Table LIII.—Standardized Mortality from Tuberculosis, Respiratory and Non-Respiratory, and Mortality at Ages 0–5, 5–10 and 10–15 from Non-respiratory Tuberculosis, per million living, 1851–1937. Percentage change during each decade.

—	All forms. All ages (stand.)		Respiratory. All ages (stand.)		Non-respiratory. 0–5	5–10	10–15	All ages (stand.)	
	Males.	Females.	Males.	Females.	Persons.	Persons.	Persons.	Males.	Females.
	Death rates per million living.								
1851–60	3,477	3,483	2,694	2,854	4,470	640	319	783	629
1861–70	3,357	3,177	2,612	2,578	4,496	528	270	745	599
1871–80	3,080	2,701	2,359	2,119	4,460	505	257	721	582
1881–90	2,656	2,251	1,966	1,672	3,959	555	307	690	579
1891–1900 ..	2,285	1,780	1,633	1,226	3,517	518	301	652	554
1901–10	1,891	1,424	1,358	951	2,556	501	303	533	473
1911–20	1,705	1,210	1,306	868	1,544	444	303	399	342
1921–30	1,110	887	869	677	836	265	182	241	210
1931	976	772	780	601	651	211	148	196	171
1932	913	727	718	562	656	195	135	195	165
1933	901	707	729	559	563	183	118	172	148
1934	832	657	669	512	528	183	120	163	145
1935	774	610	627	486	432	160	103	147	124
1931–35	*879*	*695*	*704*	*544*	*568*	*187*	*125*	*175*	*151*
1936	744	578	601	457	429	159	99	143	121
1937	739	584	595	459	454	139	106	144	125
	Percentage change from previous decade.								
1861–70	− 3	− 9	− 3	−10	+ 1	−17	−15	− 5	− 5
1871–80	− 8	−15	−10	−18	− 1	− 4	− 5	− 3	− 3
1881–90	−14	−17	−17	−21	−11	+10	+19	− 4	− 1
1891–1900 ..	−14	−21	−17	−27	−11	− 7	− 2	− 5	− 4
1901–10	−17	−20	−17	−22	−27	− 3	+ 1	−18	−15
1911–20	−10	−15	− 4	− 9	−40	−11	0	−25	−28
1921–30	−35	−27	−33	−22	−46	−40	−40	−40	−39
1934–37 ..	−30	−32	−28	−29	−45	−39	−41	−38	−39

Respiratory tuberculosis.—The deaths from tuberculosis of the respiratory system in 1937 numbered 23,970, compared with 23,801 in 1936. This number is 4·7 per cent. of all deaths compared with 6·4 in 1927 and 8·5 in 1917. The trend of the standardized death

rates since 1851–60, with the percentage decline in successive decades, is shown in Table LIII, from which it is seen that 1934-37 rates registered a decline of 28 per cent. for males and 29 per cent. for females from the mean annual rates of 1921–30, compared with 38 and 39 per cent. for non-respiratory tuberculosis.

The death rates at separate ages are given in Table LV and the trend of mortality per 100,000 for young adults at ages 15–20, 20–25 and 25–35 is compared in Table LIV with that of the equivalent average death rate at all ages under 65 in decennial periods up to 1920 and in each separate year since. (For rates at other ages from 1851–60 to 1931–35, *see* Table L of the Review for 1935.)

Table LIV.—Phthisis Mortality Rates per 100,000 living at ages 15–20, 20–25, 25–35 and Equivalent Average Rates at all ages under 65; 1851–1937.

—	Males.				Females.			
	15–20	20–25	25–35	0–65 Equivalent average rates.*	15–20	20–25	25–35	0–65 Equivalent average rates.*
1851–60 ..	240	405	403	304	352	430	458	263
1861–70 ..	220	389	411	300	312	397	439	277
1871–80 ..	168	311	371	279	241	315	356	231
1881–90 ..	129	234	304	237	181	233	280	184
1891–1900	99	189	237	201	129	159	192	137
1901–10 ..	76	152	197	169	99	123	147	107
1911–20 ..	80	135	168	143	114	134	134	94
1921 ..	71	136	139	115	114	141	121	80
1922 ..	67	146	143	117	106	143	117	78
1923 ..	63	133	140	108	130	129	117	74
1924 ..	62	133	136	109	107	136	115	74
1925 ..	64	117	135	109	107	134	112	72
1921–25 ..	*66*	*133*	*139*	*112*	*109*	*137*	*117*	*76*
1926 ..	59	109	126	101	97	131	107	66
1927 ..	61	108	123	102	103	130	112	69
1928 ..	62	105	118	98	101	126	106	64
1929 ..	63	107	119	104	100	134	109	66
1930 ..	61	101	112	95	98	123	105	63
1926–30 ..	*61*	*106*	*119*	*100*	*100*	*129*	*108*	*66*
1931 ..	61	108	111	96	98	123	103	63
1932 ..	54	105	101	89	92	121	95	58
1933 ..	50	106	105	90	88	120	97	58
1934 ..	46	95	94	83	81	113	91	53
1935 ..	40	87	89	78	72	110	85	50
1931–35 ..	*51*	*100*	*100*	*87*	*86*	*118*	*94*	*56*
1936 ..	36	81	84	76	68	107	78	47
1937 ..	37	78	83	76	67	106	82	47

* Rates in a population containing equal numbers at each age.

During the 60 years between 1851–60 and 1911–20 phthisis mortality at 15–20 declined by 67 per cent. for males and 68 per cent. for females; at 20–25 it fell by 67 per cent. for males and 69 per cent. for females, and at 25–35 by 58 per cent. for males and

71 per cent. for females. The corresponding decline in the equivalent average rates under 65 was 53 per cent. for males and 64 per cent. for females. During the period of about 12 years between 1911–20 and 1926–30 phthisis mortality at 15–20 fell by 24 per cent. for males and 12 for females; at 20–25 it fell by 22 per cent. for males and only 4 per cent. for females, and at 25–35 by 29 per cent. for males and 19 per cent. for females. In the last 9 years, from 1926–30 to 1937, the decline at 15–20 has amounted to 39 per cent. for males and 33 per cent. for females, at 20–25 it has been 26 per cent. for males and 18 per cent. for females, and at 25–35 there has been a fall of 30 per cent. for males and 24 per cent. for females.

Stationary periods of arrested fall occurred both for male and female rates at ages 15–20 between the years 1926 and 1931, and it may be significant that the persons concerned had been children between the ages of 0 and 12 during the period of food shortage in 1916–18. Similar stationary or rising periods occurred in the rates at ages 20–25 between the years 1930 and 1933, the persons comprising these groups of the population having been children of ages 3 to 12 during the 1916–18 period.

The arrest which was evident about 1931 was most pronounced in the industrial areas and in the towns where social conditions, as evidenced by a high average of persons per room, were least satisfactory. (*See* Table XLII of 1932 Review.)

The distribution of phthisis mortality in 1937, by regions and by class of area as well as by sex and age is shown in Table LV.

The relation of phthisis mortality to urbanisation is manifested by the contrast between the standardized rates for males of 75 per 100,000 in the county boroughs outside Greater London and 76 in London itself, and that of 41 in the rural districts. For females the effect of urbanisation is not so great, the rates being 55 in the county boroughs, 46 in London, and 39 in the rural districts.

The regional distribution indicates that for males the standardized rate is highest in Wales, Greater London and the North, whilst for females it is very much higher in Wales than elsewhere, and below the general average in Greater London. For males this rate is lowest in the East and for females in the South-East outside Greater London. Regional differences in mortality are greatest at 5–25, but the effects of urbanisation are most pronounced amongst males over 45, the London rates being more than double those in the rural districts at ages 45–75.

The mortality from respiratory tuberculosis in the Welsh regions has been analysed below with detail of age for the period 1935–37, and for comparison similar rates are shown for the South-West region of England, which has a similar climate and is, like Wales II, mainly rural in character.

Mean annual death rates from Respiratory Tuberculosis per million living in 1935–37.

	0–	5–	15–	25–	35–	45–	65–	75 up.	All ages (crude).
Males.									
Wales I ..	*54*	39	875	1,138	1,026	1,153	613	*300*	762
Wales II	*28*	*43*	693	1,062	1,221	1,349	1,023	*456*	829
South-West	*30*	*25*	415	758	800	925	538	*188*	555
Females.									
Wales I ..	*50*	114	1,676	1,291	708	477	338	*155*	717
Wales II	*44*	*120*	1,165	1,150	646	573	558	*276*	641
South-West	*41*	*42*	645	792	449	388	324	224	414

Mortality in Wales I was more than 50 per cent. in excess of that in South-West England for males under 35 and over 75 and for females aged 5–45, being more than double at ages 15–25 for each sex. In Wales II mortality was more than 50 per cent. in excess of South-West England at 5–25 for each sex, for males aged 35–45 and over 65 and for females aged 65–75.

Comparing the Welsh regions one with another it is evident that Wales I, which includes the South Wales coalfield, has higher mortalities than Wales II for children under 5 and for young adults aged 15–35 and also for females aged 35–45, but Wales II has higher rates for males over 35 and for females over 45. The male population aged 35–65 at 1931 census in Wales I totalled 326,133 and of these about 88,000 were workers underground in coal mines. The mean annual death rates from respiratory tuberculosis of these groups during 1930–32 are given below, and comparison is also made between the male mortality in Wales I and Wales II during 1930–32 and 1935–37.

	Rates per 100,000 males at ages 35–65. 1930–32.	1935–37.
Coal miners (underground) in Wales I	101	—
Other males resident in Wales I	124	—
All males in Wales I	118	110
All males in Wales II	139	130
All males in England and Wales	135	115

In 1930–32, therefore, industrial Wales compared well with England and Wales as a whole for males at these ages, and, except in the anthracite mines, workers below ground had specially favourable rates, the standardized phthisis ratios in the South Wales coalfield (expressed in terms of the mortality of all males of the same ages in England and Wales taken as 100) being as follows* :—

Anthracite mines :	Hewers and getters 119,	other workers below ground 76
Other coal mines :	,, ,, 94,	,, ,, 57

* See Registrar General's Decimial Supplement for 1930–32, Occupational Mortality, p. 86.

It is evident, however, that since 1930–32 male phthisis mortality at ages 35-65 has not fallen in either region of Wales as rapidly as in England.

In the Review for 1935, Table XCVII, the deaths at ages 15–35 and at 35 and over for each sex during 1931–35 in the urban and rural parts of each county were expressed as percentages of the deaths expected if the populations had been subject at each age to the standard rate of England and Wales as a whole in the same period. Aggregating the urban districts of the several counties, and also the rural districts, the following percentage mortality ratios for 1931–35 are obtained :—

	Standardized mortality indices for Respiratory Tuberculosis in 1931–35.			
	Males.		Females.	
	15–35.	35 and over.	15–35.	35 and over.
England and Wales (all areas) ..	100	100	100	100
Wales I — Cardiff C.B.	197	141	136	133
Wales I — Merthyr Tydfil C.B.	160	76	240	114
Wales I — Newport C.B. ..	138	114	180	133
Wales I — Swansea C.B. ..	146	108	150	106
Wales I — Other urban districts	126	83	168	111
Wales I — Rural districts ..	102	70	147	105
Wales II — Urban districts ..	113	124	120	131
Wales II — Rural districts ..	115	94	148	143

In the county boroughs and urban districts of Wales I phthisis mortality was very high for young adults of both sexes, but at ages over 35 there was no important excess except in Cardiff and Newport, and the areas most concerned with coal mining gave low rates for males at those ages. The urban districts of Wales II showed a moderate excess at both age periods for each sex. The rural districts of Wales I showed a large excess for young adult females and those of Wales II for females of both age periods.

Tuberculosis of Other Organs.—Table LIII shows that the standardized death-rate from non-respiratory tuberculosis fell very slowly between 1851 and 1900, but between 1891–1900 and 1911–20 the decline amounted to about 20 per cent. in each decade. Since 1911–20 mortality has been falling at the rate of about 40 per cent. in each decade. Amongst children under 5 the rate began to improve about 1880 and has fallen by 40 per cent. or more in each decade since 1901–10; at 5–10 improvement was slight up to 1901–10 but the rate has fallen by 40 per cent. per decennium since 1911–20; at 10–15 no improvement was seen between 1861–70 and 1911–20 but a decline has occurred since, similar in degree to that at earlier ages.

Table LV.—Tuberculosis of Respiratory System: Mortality per 100,000 Living at different Ages in different Areas, 1937.

—	England and Wales.	Greater London.	London Administrative County.	South-East, excluding Greater London.	North.	Midland.	East.	South-West.	Wales.	County Boroughs outside Greater London.	Other Urban Districts outside Greater London.	Rural Districts outside Greater London.
MALES.												
All Ages—												
Crude ..	70	77	94	57	75	70	53	57	77	89	60	47
Standardized..	60	64	76	48	64	60	46	48	68	75	52	41
0— ..	6	6	9	4	7	9	6	8	6	10	5	4
5— ..	3	3	1	2	4	4	4	3	4	5	3	1
15— ..	57	55	60	37	68	55	41	46	78	73	54	39
25— ..	83	89	106	68	85	82	70	72	105	99	73	65
35— ..	100	101	113	98	99	103	86	87	109	119	90	80
45— ..	124	135	169	102	135	129	93	91	122	166	103	75
55— ..	122	148	190	94	131	119	86	84	120	163	98	65
65— ..	74	106	138	55	78	72	48	54	66	101	49	49
75 & up ..	32	42	50	32	29	31	11	28	40	32	34	21
FEMALES.												
All Ages—												
Crude ..	48	45	51	39	50	49	41	41	72	57	45	39
Standardized..	46	41	46	37	49	47	40	39	72	55	43	39
0— ..	6	7	5	4	8	8	5	2	4	9	5	4
5— ..	7	4	3	3	8	7	7	6	13	8	7	7
15— ..	87	76	83	63	99	88	62	64	144	110	80	66
25— ..	82	75	82	71	81	83	75	83	137	92	78	79
35— ..	54	52	57	50	55	58	51	46	73	63	53	45
45— ..	40	37	41	34	42	46	42	35	51	48	40	32
55— ..	36	33	42	31	37	35	39	34	53	44	31	32
65— ..	31	33	42	30	30	25	32	29	47	31	29	29
75 & up ..	17	19	24	18	15	12	11	23	20	18	18	11

The distribution of mortality from non-respiratory tuberculosis in separate towns and counties during 1931–35 was analysed in Table XCVII of the Review for 1935, and it was apparent that many of the Welsh areas had high rates for these forms of tuberculosis as well as for phthisis. For comparison with the rates at separate ages during the years 1935–37, which have been given on page 99 of this Review for respiratory tuberculosis in Wales I, Wales II and the South-West of England, similar rates are given below for tuberculosis of other organs :—

Mean annual death rates from Non-respiratory Tuberculosis per million living in 1935–37.

	0–	5–	15–	25–	35–	45–	65–	75 up.	All ages (crude).
Males.									
Wales I ..	551	139	217	140	114	111	*52*	—	167
Wales II..	406	*117*	267	173	*100*	*72*	*58*	*114*	154
South-West	404	100	119	106	97	71	*57*	*47*	113

Females.									
Wales I ..	427	192	195	126	59	69	*30*	—	142
Wales II..	350	158	188	131	*95*	*50*	*112*	*138*	131
South-West	313	76	112	90	72	67	*48*	*87*	93

At each age group under 35, after which the numbers of deaths become small, each of the Welsh regions has considerable excess of mortality compared with the South-west of England. It is also evident that children under 15 suffer a higher mortality from this cause in Wales I than in Wales II, but for young adult males aged 15–35 the position is reversed whilst for females of these ages the rates do not differ appreciably.

Effects of Multiple Cause certification on Tuberculosis death rates.—When tuberculosis is entered on a death certificate together with some other cause, precedence is given to the latter if it be one of the acute infections, cancer or other of the diseases set out under Rule 6 (Manual of International List, p. xxx), but over most other causes tuberculosis is preferred in classification, regardless of the order of statement of the causes on the certificate. When respiratory tuberculosis is associated with tuberculosis of some other organ the death is classed to the former. Classification of multiple cause deaths according to the physician's choice as to which was the more essential cause rather than by the operation of these rules would reduce the total deaths classed to tuberculosis by about 3 per cent., as the following comparison for 1936 and 1937 demonstrates.

	Deaths classed to the disease in 1936 and 1937.				
	By selective rules. (Table 6).		By order as stated on certificates.		Percentage change if second method is used.
	1936.	1937.	1936.	1937.	1936–37.
Tuberculosis, all forms ..	28,268	28,529	27,433	27,713	— 3
Respiratory system ..	23,801	23,970	22,986	23,181	— 3
Central nervous system	1,792	1,796	1,823	1,813	+ 1
Intestines, peritoneum..	682	676	718	720	+ 6
Vertebral column ..	388	384	345	348	— 10
Other bones and joints	221	185	196	167	— 11
Skin and subcutaneous tissues..	44	62	36	43	— 25
Lymphatic system (except abdominal or bronchial glands) ..	61	53	45	47	— 19
Genito-urinary system..	292	272	298	283	+ 3
Other organs	28	45	32	44	+ 4
Disseminated tuberculosis	959	1,086	956	1,067	+ 12

Deaths classed to tuberculosis of the bones, cutaneous and lymphatic systems would be reduced by 10 per cent. or more, but tuberculosis of the nervous and urinary systems, intestines and peritoneum and disseminated tuberculosis would be slightly increased.

34.—**Syphilis.**—Deaths assigned to this cause numbered 1,243, 851 of males and 392 of females. In the seven years 1931–37 the deaths classed to congenital syphilis have totalled 412, 365, 296, 261, 239, 220 and 196 and those classed to acquired or unspecified syphilis have numbered 1,034, 938, 1,025, 973, 1,003, 983 and 1,047. Standardized mortality of males declined from 77 per million in 1871–80 to 58 in 1901–10, increased to 74 in 1917 and 1920, declined again to 39 in 1925, rose to 50 in 1928 and has again fallen to 34 in 1937. Female mortality followed a similar course, from 70 in 1871–80 to 45 in 1901–10, rising to 56 in 1920 and falling to 25 in 1925, followed by a temporary increase to 29 in 1927 and subsequent fall to 16 in 1935 and the two following years.

Standardized death-rates for syphilis, tabes dorsalis, general paralysis of the insane and aneurysm from 1911 to 1928 were set out in the Review for 1928 (Table XLIX), and this series is continued in Table LVI for 1911–20 and each year since.

Table LVI.—Standardized Mortality per million living from Syphilis and Diseases of Syphilitic Origin, 1911–37.

—	1911–20.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
MALES.																		
34. Syphilis	68	64	50	48	42	39	43	45	50	45	45	45	39	39	36	37	35	34
80. Tabes Dorsalis ..	29	26	29	26	26	25	26	26	25	29	22	20	23	21	17	19	17	16
83. General Paralysis of Insane	86	59	65	64	55	56	51	54	49	42	40	40	35	31	32	28	25	22
96. Aneurysm	42	35	36	34	35	34	32	36	37	37	38	38	36	35	36	36	37	35
Total ..	225	184	180	172	158	154	152	161	161	153	145	143	133	126	121	120	114	107
FEMALES.																		
34. Syphilis	48	48	37	30	28	25	26	29	28	26	25	24	23	21	18	16	16	16
80. Tabes Dorsalis ..	5	5	5	5	4	5	4	5	4	5	4	4	5	4	3	4	3	3
83. General Paralysis of Insane	17	12	13	12	12	11	11	11	10	10	8	10	9	9	8	9	8	8
96. Aneurysm	9	8	8	8	7	9	9	9	9	10	10	10	11	13	13	14	16	16
Total	79	73	63	55	51	50	50	54	51	51	47	48	48	47	42	43	43	43

Since no significance can be attached to the mention of or omission of mention of syphilis on certificates of death from the last 3 causes, such deaths are all classed to the latter causes and not to syphilis. The combined rate from the 4 causes has declined since 1911–20 by 52 per cent. for males and 46 per cent. for females.

Each of these diseases, when associated on a death certificate with some other cause of death, is given a high preference for statistical classification similar to that given to tuberculosis and influenza, being preferred to most diseases except acute infections and cancer (Rule 6, Manual of International List). Classification of multiple cause deaths according to the physician's choice of the

essential cause rather than by selective rules would reduce the total deaths classed to the 4 diseases in 1936 and 1937 from 8,415 to 7,380, or by 12 per cent., tabes dorsalis being most reduced (24 per cent.) whilst general paralysis is reduced by 9 per cent. and aneurysm by 10.

The increase in female mortality from aneurysm contrasts with the favourable trend for the other syphilitic diseases.

36. **Purulent infection, Septicæmia.**—Deaths classed to this group of generalised septic infections numbered 298 of males and 156 of females, these being the lowest recorded since the group was distinguished in 1911. In 1934, when mortality from all streptococcal diseases was at rather high levels, the deaths numbered 817 and have declined to 693, 588 and 454 in successive years since. The crude annual death rate ranged from 13 to 18 per million during the period 1911–28, reached 22 in 1929–30, and in the seven years 1931–37 has been 19, 17, 19, 20, 17, 14, 11 per million, a low record being established in 1937.

Mortality at different ages in 1911–20, 1934 and 1937 is compared below.

	All ages (crude).	Rates per million living at ages :— 0–	5–	15–	25–	35–	45–	55–	65 and over.
Males.									
1911–20 ..	21	26	9	13	12	20	31	45	60
1934 ..	27	32	10	12	13	31	42	54	61
1937 ..	15	23	8	8	9	16	20	25	27
Females.									
1911–20 ..	11	23	5	5	7	8	13	17	27
1934 ..	14	18	11	7	8	13	14	20	33
1937 ..	7	18	4	3	4	5	8	11	16

39. **Weil's Disease.**—The deaths classed to this disease and its various synonyms numbered 17 compared with 9 in 1936 and an annual average of 7 during 1931–35. The sex and age distribution of the 60 deaths which have occurred during the last 7 years is shown below :—

Ages.	1931–35.		1936.		1937.	
	M.	F.	M.	F.	M.	F.
0–	—	1	—	—	1	—
15–	4	3	—	—	1	—
25–	5	—	4	—	4	—
35–	4	—	—	1	2	1
45–	7	—	2	—	4	1
55–	6	—	1	1	2	—
65 and over ..	3	1	—	—	1	—
All ages	29	5	7	2	15	2

44 (1 and 2). **Vaccinia and Sequelæ of Vaccination.**—Five deaths have been assigned to the heading of vaccinia in 1937, namely of a male aged 4 months certified as " acute post-vaccinal encephalitis," of a male aged 5 months certified as " generalized vaccinia," of a male aged 14 certified as " encephalitis following vaccination (reason unknown)," of a female aged 4 months certified as " bronchopneumonia, post-vaccinal encephalitis," and of a female aged 4 months certified as " encephalitis " which, on enquiry, was stated to have been post-vaccinal. Vaccination was mentioned on the death certificate in the first four instances.

Three deaths following vaccination against smallpox have been classed to the group " other sequelæ of vaccination," of a male aged 3 months certified as " acute septicaemia with septic pneumonia following vaccination," of a male aged 7 months certified as due to " bronchopneumonia " with " septic dermatitis following vaccination " as contributory cause, and of a male aged 24 certified as " cerebral thrombosis following vaccination."

Two other deaths have been classed to the group " other sequelæ of vaccination " which did not follow vaccination against smallpox. In the title of this group " vaccination " is interpreted (pending the introduction of the revised form of the International List) in its widest sense to include the administration of vaccines or sera for the prevention (not treatment) of diseases other than smallpox, the disease, in such cases, being specified by a footnote in all tables where such deaths appear under this heading. One of these two deaths was that of a male aged 21 attributed to " status lymphaticus following inoculation of T.A.B." for prevention of typhoid and paratyphoid fevers. The other death, of a male aged 67, was attributed to " heart failure in reaction to dose of anti-dysenteric vaccine " administered for the prevention of dysentery.

The deaths of two male infants aged 4 months from gastro-enteritis and from pneumonia due to multiple abscesses, occurring a fortnight after vaccination but without evidence of causal association, were assigned to gastro-enteritis and septicaemia respectively, vaccination being mentioned on the death certificate in the first of these cases.

44 (6 : 1). **"Pink Disease."** — The disease of infancy and early childhood described by the synonyms pink disease, erythrœdema, erythrœdema polyneuritica, dermato-neuritis or polyneuritis, or acrodynia was included from 1931 onwards in this group by a decision of the International Conference of 1929, although its ætiology was at that time, and still is, obscure. In 1927 it had been included in the group of other general diseases (No. 69 : 3) in the Annual Reviews, and in the " Nomenclature of Diseases, 1931," it was likewise placed amongst the group of " diseases due to disorders of nutrition or of metabolism." The use of the names acrodynia and dermato-neuritis or polyneuritis has become infrequent of recent years whereas deaths attributed

to " pink disease " have rapidly increased (*see* Table LVIII of the Review for 1935 for the complete record since 1923, when a single death occurred).

	1923–25	1926–30	1931–35
Acrodynia	4	13	5
Dermato-neuritis or dermato-polyneuritis	1	8	—
Erythrœdema polyneuritica (or polyneuritis)	4	18	10
Erythrœdema	—	35	34
" Pink Disease "	4	48	200
Total	13	122	249

The total deaths in successive years increased steadily from 1923 to 1936, the numbers being 1, 4, 8, 20, 20, 21, 28, 33, 33, 43, 54, 59, 60, 88, but in 1937 there was a slight fall to 73, of which 26 were of males and 47 of females, the age distribution being as follows :— 43 at ages under 1 year, 30 at 1–5.

45–53. **Cancer.**—The deaths ascribed to cancer during 1937 numbered 66,991—32,189 of males and 34,802 of females. For both sexes these numbers are the highest yet recorded.

Of these deaths 59,166 were referred to carcinoma, 2,745 to sarcoma, and 5,080 to " cancer " not otherwise defined. These are the largest numbers yet recorded for carcinoma, but not for sarcoma, which of late years has accounted for a somewhat smaller proportion, now 41 per 1,000, of the total cancer deaths than heretofore. The number in the undefined group, which has recently declined year by year, increased slightly, the proportion being now 76 per 1,000 compared with 75 in 1936.

The standardized death-rate for males in 1937 amounts to 1,071 per million, and that for females to 951. The male rate is the highest yet recorded, the rates in the preceding 5 years having been 1,052, 1,035, 1,046, 1,058, 1,068. In 1928 the increase in female mortality was arrested and the rate decreased each year from the maximal level of 991 to 966 in 1932, and has fluctuated about that value since. Table XLI* in the 1927 volume shows that the standardized rate for males first exceeded that for females in 1924, and since that date the excess has been maintained, increasing to 99 per million in 1935 and 1936 and 120 in 1937.

Table 9 shows that the standardized rate in the population regardless of sex, which averaged 998 in 1926–30 and 1,000 in 1931–35, rose to its highest level of 1,010 in 1936, and fell again to 1,002 in 1937. The crude rate has continued to increase steadily, from 1,362 in 1926 to 1,633 in 1937, owing to the increasing proportion of persons of advanced age in the population (Table 7). Owing to the

* This table gives standardized death-rates from Cancer by Sex for each year 1851–1927.

greater average age of the female population the crude death rate for females has hitherto exceeded that for males, though to a diminishing extent, but for the first time in 1937 the male rate was slightly above that of females.

The necessity for taking into account the differing age distributions of populations when comparing cancer death rates may be seen by applying the England and Wales rates in 1931–35 at ages 0–, 25–, 35–, 45–, 55– and 65 upwards for each sex to the census populations of India and of Bombay in 1931, and thus calculating the crude cancer death rates which would be expected if those populations suffered the same cancer mortality, age by age, as in England and Wales. The expected death rate would be 661 per million in India, and 606 in Bombay, compared with the 1931–35 rate of 1,534 in England and Wales, that is to say the differences in average age of the populations would suffice to account for a rate in Bombay only two-fifths of that in England and Wales. The combined effects of the age factor and of less complete recognition of cancer as a cause of death need to be carefully evaluated before valid conclusions can be drawn that the incidence of cancer is less in one country than in another at the same ages. Even for broad age groups such as "ages over 45" comparisons of cancer death rates may be fallacious owing to differing age distribution within the defined range. Thus if the death rates in England and Wales at the 4 ages 45–, 55–, 65–, 75 and over for each sex in Table LVII are applied to the estimated populations at those ages in the North and South-East regions of England (Table 2) the resulting death rates at ages 45 and over would be 4,633 and 4,918 per million respectively, an excess of 6 per cent. in the rate for the South-East being accountable for by differences in the age and sex distributions of the populations over 45 in the two regions. Valid comparisons of cancer death rates can only be made, therefore, for age groups of restricted range or after standardization if broad groups are being compared.

The mortality from cancer as a whole in 1937 is compared by sex and age in Table LVII for England and Wales, with record of the degree of difference in sex mortality at the various ages.

At ages from 35 years up to 55 the female exceeds the male rate but from 55 years to the end of life the male rates are in excess. This female excess in middle age, relatively greatest at 35–45, is associated with, and largely explained by, the special frequency at this age of cancer of the uterus and of the female breast, which together account for a larger proportion of the total deaths of women from cancer at each age between 25 and 65 than at all ages jointly. The percentage share of the breast and uterus in the total cancer mortality of females, in 1937, was :—

	All ages.	0–	25–	35–	45–	55–	65–	75 up.
Breast ..	19·9	1·7	17·9	27·7	26·1	21·6	16·4	16·3
Uterus ..	12·8	5·4	11·9	23·0	20·7	14·3	9·4	6·8

Table LVII.—Mortality from Cancer (All Sites), 1937.

	Mortality per Million.			Sex Ratio.		
	Males.	Females.	Persons.	Males.	Females.	Persons.
All Ages { Crude ..	1,634	1,632	1,633	1,001	999	1,000
All Ages { Standardized	1,071	951	1,002	1,069	949	1,000
0—	42	28	35	1,200	800	1,000
5—	22	20	21	1,048	952	1,000
15—	58	42	50	1,160	840	1,000
25—	160	154	157	1,019	981	1,000
35—	465	695	587	792	1,184	1,000
45—	1,615	2,032	1,840	878	1,104	1,000
55—	4,722	3,956	4,311	1,095	918	1,000
65—	10,198	7,442	8,681	1,175	857	1,000
75—	14,946	11,858	13,054	1,145	908	1,000

The mortality attributed to sarcoma, carcinoma and cancer undefined is distinguished in Table LVIII, other details of the deaths being shown in Tables LX and LXI. The rates for cancer undefined are lower than in 1931–35 at every age over 45, indicating increased precision in the statement of the type of cancer. Sarcoma rates are appreciably lower at all ages over 35 for males, and at 0–15 and 35 upwards for females. Carcinoma rates show an increase at all ages for males, and at 0–25 and 65 upwards for females.

Table LVIII also shows the trend of cancer mortality by sex and age since 1901–10.

The crude death-rate at all ages for males in 1937 is 111 per cent. and the female rate 59 per cent. higher than the respective rates in 1901–10, but if standardized rates are compared these excesses are reduced to 37 and 1 per cent. respectively. These great differences in the rate of increase as shown by comparing crude and standardized rates again emphasize the desirability of restricting comparison to rates corrected for the changing age of the population. The standardized figures take into account the rapidly increasing proportion of elderly persons in the population and attempt to correct the exaggerated impression conveyed when crude rates are compared. The equivalent average death-rates (E.D.R.) for each sex at ages under 65, that is to say the rates which would occur in populations consisting of equal numbers at each year of age up to 65, together with the rates at 65–75 and 75 and over, provide a more complete picture of cancer mortality, unaffected by differences in age constitution between the populations which have to be compared. These equivalent average death-rates are readily calculated by finding the arithmetic mean of the death-rates at the 13 quinquennial age groups between 0 and 65. (*See* p. 11.)

The recent trend of the sex death-rates at the several age-groups over 25 and of the equivalent average rates is indicated below, the

rates per million being expressed as percentages of the 1901–10 rate in each instance.

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
Males											
25—	108	113	111	102	107	106	106	116	111	126	147
35—	102	103	104	107	102	102	109	105	113	109	112
45—	104	105	102	106	106	101	106	107	105	105	104
55—	120	121	119	116	119	123	118	120	121	121	121
65—	149	149	149	152	153	155	148	151	153	152	153
75 and up	167	172	181	178	173	179	183	180	185	193	190
E.D.R. 0–65	114	116	113	112	114	116	114	115	116	116	117
Females											
25—	95	98	93	90	89	94	89	91	94	99	91
35—	90	93	87	88	87	86	86	87	85	87	82
45—	90	93	89	88	92	90	89	90	87	88	88
55—	94	94	93	94	93	93	94	94	92	91	90
65—	116	118	122	117	114	112	114	114	113	113	112
75 and up	148	152	156	157	149	148	148	149	147	154	150
E.D.R. 0–65	93	94	92	92	92	92	92	92	90	90	89

Table LVIII.—Cancer Mortality in 1911–20, 1921–30, 1936 and 1937 per cent. of that in 1901–10. Sarcoma, Carcinoma and Undefined: rates per million in 1931–35 and 1937.

—	Mortality per cent. of the rate in 1901–10.*				Mortality per million living.					
					Sarcoma.		Carcinoma.		Cancer undefined.	
	1911–20	1921–30	1936	1937	1931–35	1937	1931–35	1937	1931–35	1937
MALES.										
All ages—										
Crude.. ..	128	167	209	211	78	78	1,296	1,428	136	127
Standardized..	114	128	136	137	63	62	889	925	93	83
0–	96	100	125	117	24	23	2	3	1	2
15–	107	112	122	141	30	35	13	18	3	5
25–	101	106	126	147	36	44	76	105	7	11
35–	102	101	109	112	63	59	344	372	33	34
45–	108	105	105	104	125	114	1,369	1,383	134	118
55–	114	121	121	121	202	189	4,080	4,171	411	362
65–	120	143	152	153	269	261	8,913	9,138	962	799
75 and up ..	124	162	193	190	284	239	12,533	13,487	1,388	1,222
FEMALES.										
All ages—										
Crude.. ..	114	135	159	159	58	56	1,364	1,454	136	121
Standardized..	102	104	103	101	44	41	842	840	83	70
0–	100	111	116	121	19	16	2	3	1	3
15–	103	106	130	127	21	20	15	19	3	4
25–	92	94	99	91	24	23	120	120	11	11
35–	93	90	87	82	41	37	635	615	55	44
45–	98	92	88	88	88	82	1,820	1,810	173	140
55–	99	96	91	90	137	118	3,618	3,547	352	291
65–	107	116	113	112	181	165	6,682	6,707	682	569
75 and up ..	116	143	154	150	199	254	10,410	10,676	1,094	927

* The rates per 100,000 at 1901–10, 1911–20, 1921–30 and 1931 were given in Table XLII of the Review for 1931. The percentage ratios in this table are based upon rates per million, that is to say, upon an additional significant figure, and therefore differ slightly from those given in previous years.

Comparison of the last few years with the preceding years indicates that for males the equivalent rate at ages under 65 has risen slightly in the last eight years, but for females, after a decline to 92 per cent. of the 1901–10 level by 1929, it remained almost stationary till 1934, falling again to 89 per cent. in the last 3 years. At ages 65–75 the rates have not changed appreciably for either sex since 1931 but at 75 and over they have increased slightly.

Cancer mortality is analysed according to sex, age, region and class of area in Table LIX. The standardized rate for each sex declines, as noticed in previous years, from a maximum in the county boroughs to a minimum in the rural districts, the range according to urbanization, as thus measured, being much greater for males, 116 to 91 per 100,000, than for females, 99 to 90 per 100,000. The average standardized male rates in the five years 1931–35 were 122 in London, 114 in the county boroughs, 101 in the urban districts and 89 in the rural districts, the corresponding averages for females being 100, 101, 97 and 92.

Greater London and the North give the highest standardized mortality for males, and Wales and the North for females, the regional dispersion being greater for males than for females.

Table LIX.—Cancer (All Sites) : Mortality per 100,000 Living in different Areas and at different Ages, 1937.

—	England and Wales.	Greater London.	London Admin. County.	South-East, excluding Greater London.	North.	Midland.	East.	South-West.	Wales.	County Boroughs outside Greater London.	Other Urban Districts outside Greater London.	Rural Districts outside Greater London.
MALES.												
All Ages—												
Crude	163	167	189	166	162	157	171	179	151	168	159	159
Standardized..	107	117	127	95	113	106	93	96	101	116	102	91
0– ..	4	7	7	3	3	4	3	8	2	4	2	5
5– ..	2	4	4	2	2	2	1	1	1	2	2	1
15– ..	6	5	5	6	6	6	5	8	5	7	5	6
25– ..	16	16	19	13	17	18	11	17	13	18	15	15
35– ..	47	50	54	36	51	47	38	42	45	54	43	36
45– ..	162	182	193	143	171	152	119	123	172	176	152	128
55– ..	472	505	569	412	501	478	378	423	456	522	455	384
65– ..	1,020	1,097	1,181	904	1,093	995	1,003	942	905	1,130	973	876
75 and up ..	1,495	1,685	1,770	1,439	1,503	1,469	1,350	1,362	1,466	1,483	1,460	1,410
FEMALES.												
All Ages—												
Crude	163	157	170	177	159	153	187	192	161	161	167	168
Standardized..	95	94	99	88	100	93	97	89	103	99	95	90
0– ..	3	3	2	2	3	3	5	2	2	4	3	1
5– ..	2	3	2	3	1	2	1	4	1	2	1	3
15– ..	4	5	6	3	5	4	2	3	4	5	4	4
25– ..	15	14	15	16	18	14	16	10	16	16	16	14
35– ..	69	68	71	61	73	72	78	59	69	74	67	68
45– ..	203	201	214	183	209	192	234	192	251	215	199	192
55– ..	396	389	393	365	420	382	385	372	442	415	399	362
65– ..	744	735	770	671	807	722	730	724	776	769	758	693
75 and up ..	1,186	1,174	1,311	1,188	1,212	1,195	1,149	1,145	1,179	1,184	1,182	1,205

Cancer by Site.—The parts of the body affected by fatal cancer in 1937 are shown in Tables LX and LXI in greater detail than that provided by the international classification, six out of its nine headings (Nos. 45–53) being sub-divided. Fuller details with regard to cancer of the uterus and of the skin than those shown in the Table are also available. The cancer mortality distribution is shown by sex, age and site as well as by the nature of the growth to which the deaths were attributed, under the headings carcinoma, sarcoma and "cancer" not otherwise defined. Continuing the practice of many years past, every practicable effort is made, with the co-operation of certifying practitioners, to assign the deaths to the organs primarily affected, in order to obtain as true indications as possible of the incidence of the disease. It is well recognized, however, that for certain organs, especially the liver and lung, commonly affected secondarily to such a degree that the symptoms dominate any that may arise from the primarily affected organ, ascertainment of the latter may prove impracticable. Such exceptions are becoming more rare, due no doubt to improvement in diagnostic methods, an encouraging sign justifying the inclusion, in the notes to certifying medical practitioners which accompanies the book of death certificates, of the request that "the seat of primary occurrence should be returned in all cases where known."

The distribution of cancers of each individual site, according to the nature of the growth, is given in Table LXI. The percentage of cancers with nature undefined is, amongst the organs distinguished, highest for the brain, kidney, liver, prostate, ovary, thyroid and gall bladder. The percentage of all cancers defined as sarcoma ranges from 79 for the bones, 63 for the brain, 51 for kidney or suprarenal and 34 for the testis to 1 per cent. for the digestive tract and female breast.

The facts as to cancer mortality distribution by sex, age and site contained in Table LX are summarized for each site in Table LXII, which compares standardized rates in 1937 with the rates for other recent periods for the same sex and site. In this table the tendency to increase of mortality merely in consequence of increase in the proportion of persons at risk falling within those ages at which cancer chiefly occurs, as well as the tendency to female excess for the same reason, has been allowed for by standardization so that all the rates quoted may be compared with one another.

The chief increases in 1937 over the previous year are, for males—lung 10·8 per million, rectum 3·4, mediastinum 2·8, testis 1·7 and prostate 1·4, and for females—intestine 3·7 and rectum 1·1.

The sites showing an increase in standardized mortality from 1921–30 to 1937 are, for males, the lung (302 per cent. increase), testis (47), pancreas (37), prostate (36), kidney and suprarenal (26), intestine (15), breast (11), bladder (10), rectum (8), gall bladder (7), stomach (6), bones (3), and, for females, the lung (142 per cent. increase), ovary and Fallopian tube (40), pancreas (31), pharynx (33),

kidney and suprarenal (14), intestine (10), oesophagus (6), bones (6), breast (2) and bladder (1). The standardized rates for the quinquennium 1931–35 for each site were given in Table LXV of the Review for 1935, as were also the death rates at separate ages in 1911–20, 1921–30 and 1931–35.

Table LX.—Sites and Forms of Fatal Cancer by Sex and Age, 1937.

—	All Ages.	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
	DEATHS OF MALES.															
All Sites	**32,189**	**59**	**68**	**190**	**534**	**471**	**819**	**1,378**	**2,402**	**3,777**	**5,376**	**6,050**	**5,378**	**3,647**	**1,528**	**512**
Carcinoma	**28,148**	**3**	**11**	**58**	**350**	**352**	**680**	**1,151**	**2,086**	**3,309**	**4,770**	**5,414**	**4,827**	**3,275**	**1,387**	**469**
Sarcoma	**1,544**	**51**	**52**	**116**	**146**	**79**	**84**	**126**	**140**	**181**	**186**	**179**	**113**	**63**	**22**	**6**
Cancer, N.S. ..	**2,497**	**5**	**5**	**16**	**38**	**40**	**55**	**101**	**176**	**287**	**414**	**457**	**438**	**309**	**119**	**37**
45 Lip	257	—	—	—	—	1	3	2	8	17	30	38	50	48	38	22
Tongue	980	—	—	—	2	2	9	22	58	102	204	187	194	135	50	15
Mouth	352	—	—	—	—	—	1	7	24	31	59	88	80	39	19	4
Tonsil	237	—	—	—	2	2	4	2	18	25	62	44	43	27	7	1
Jaw	372	2	1	3	6	2	7	19	23	46	58	72	70	39	17	7
Pharynx	376	—	2	2	2	5	2	13	15	41	70	90	65	47	15	7
Others (1)	210	—	—	—	2	1	2	4	12	10	41	55	41	29	7	6
Total	2,784	2	3	5	14	13	28	69	158	272	524	574	543	364	153	62
46 Œsophagus	1,703	1	—	1	5	8	19	32	85	221	341	397	309	181	82	21
Stomach	7,063	—	1	5	87	109	214	340	627	922	1,196	1,330	1,150	713	296	73
Small intestine	90	—	—	1	1	3	4	5	9	12	18	11	11	10	5	—
Cæcum	335	—	—	6	7	5	10	9	14	34	56	65	59	39	25	6
Hepatic flexure	58	—	—	—	2	1	1	4	2	4	9	10	12	10	2	1
Splenic flexure	98	—	—	1	3	—	3	3	5	11	18	16	20	13	5	—
Sigmoid flexure ..	768	—	—	4	8	9	10	20	40	88	135	168	145	84	43	14
Large intestine (colon)	2,667	—	—	6	37	22	47	87	142	243	417	548	534	364	168	52
Rectum (excluding anus)	3,458	—	—	9	44	38	67	94	195	354	596	695	676	465	174	51
Liver	1,088	1	—	4	8	8	19	41	81	132	166	216	191	139	64	18
Gall bladder	284	—	—	—	3	—	5	11	26	27	38	56	54	44	13	7
Pancreas	1,096	—	2	1	5	12	34	67	81	139	207	201	168	113	49	17
Others (2)	525	6	1	6	13	11	17	14	34	58	64	101	90	70	28	12
Total	19,233	8	4	44	223	226	450	727	1,341	2,245	3,261	3,814	3,419	2,245	954	272
47 Larynx (3)	931	—	—	3	2	8	16	25	71	117	187	213	141	105	35	8
Lung (4)	2,930	—	2	11	92	93	165	296	470	544	518	401	199	113	22	4
Others (5)	308	1	4	6	13	5	12	26	27	56	58	42	35	18	3	2
Total	4,169	1	6	20	107	106	193	347	568	717	763	656	375	236	60	14
50 Breast	60	—	—	—	1	1	4	1	2	5	16	11	8	8	2	1
51 Kidney, Suprarenal ..	405	21	6	2	15	15	26	28	36	60	65	62	43	20	4	2
Bladder, Urethra, Ureter	1,026	2	—	1	7	7	17	47	62	124	167	180	214	122	56	20
Prostate	1,996	1	2	2	3	3	8	13	49	113	277	422	487	393	175	48
Testis	197	1	1	19	47	25	14	18	10	12	13	12	8	7	7	3
Penis	165	—	—	—	3	1	—	3	14	12	28	32	28	23	17	4
Scrotum . ..	68	—	1	—	1	2	—	1	5	4	15	15	11	10	3	—
Total	3,857	25	10	24	76	53	65	110	176	325	565	723	791	575	262	77
52 Skin	657	—	4	2	9	9	13	23	25	45	67	91	111	121	67	70
53 Brain, Meninges ..	221	11	17	13	31	18	20	25	22	38	14	8	2	1	1	—
Thyroid	63	—	—	1	1	3	2	6	8	5	14	9	7	4	1	2
Bones (jaw excepted) ..	444	6	10	57	42	17	17	22	39	46	53	50	41	30	9	5
Others (6) and unspecified	701	6	14	24	30	25	27	48	63	79	99	114	81	63	19	9
Total	1,429	23	41	95	104	63	66	101	132	168	180	181	131	98	30	16

(1) Includes Palate, Cheek (internal surface), Salivary Glands, Gums.
(2) ,, Intestine undefined, Peritoneum, Omentum, Mesentery, Anus.
(3) ,, Trachea.
(4) ,, Pleura.
(5) Mediastinum.
(6) Includes Lymphatic Glands, Abdomen, Eye, Muscle, etc.

Table LX.—*continued.*

—	All Ages.	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
							DEATHS OF FEMALES.									
All Sites	34,802	38	62	140	537	787	1,402	2,271	3,336	4,056	4,830	5,008	5,199	3,904	2,112	1120
Carcinoma	31,018	5	10	62	418	694	1,242	2,028	2,967	3,638	4,329	4,511	4,689	3,519	1,897	1009
Sarcoma	1,201	27	44	66	79	56	59	92	133	138	128	130	96	79	53	21
Cancer, N.S. ..	2,583	6	8	12	40	37	101	151	236	280	373	367	414	306	162	90
45 Lip	22	—	—	—	—	—	—	—	2	1	—	1	6	5	3	4
45 Tongue	137	—	—	—	1	3	1	8	6	15	20	20	31	20	8	4
45 Mouth	41	—	—	—	—	1	—	2	2	4	6	10	4	6	2	4
45 Tonsil	44	—	—	4	—	3	1	1	4	4	7	5	7	4	1	3
45 Jaw	169	1	1	4	2	2	3	7	15	17	26	30	21	19	14	7
45 Pharynx	138	—	1	4	5	1	3	8	19	20	20	22	17	9	7	2
45 Others (1)	29	1	—	—	1	—	—	1	1	—	7	2	4	8	2	2
Total	580	2	2	12	9	10	8	27	49	61	86	90	90	71	37	26
46 Œsophagus	716	—	—	—	6	4	20	40	81	87	112	116	116	69	42	23
46 Stomach	5,748	—	—	7	65	86	127	223	368	593	792	983	1,102	800	424	178
46 Small intestine	90	—	—	—	3	2	4	6	5	8	10	22	11	7	6	6
46 Cæcum	449	—	—	1	7	4	9	18	34	47	54	68	75	64	48	20
46 Hepatic flexure	69	—	—	—	1	2	5	—	6	2	12	8	12	13	5	3
46 Splenic flexure	124	—	—	—	3	5	3	7	6	14	10	22	22	21	8	3
46 Sigmoid flexure	802	—	—	1	10	16	19	39	69	83	115	121	155	102	53	19
46 Large intestine (colon)	3,405	—	—	2	31	50	83	133	212	299	420	495	626	579	324	151
46 Rectum (excluding anus)	2,149	1	1	8	38	44	60	103	157	215	311	333	396	271	140	71
46 Liver	1,133	1	—	2	5	13	25	41	70	121	145	185	214	181	87	43
46 Gall bladder	584	—	—	—	3	2	5	18	39	63	98	118	117	70	28	23
46 Pancreas	989	1	—	1	4	9	16	37	62	116	148	184	167	141	75	28
46 Others (2)	735	1	2	4	9	11	22	36	46	71	106	101	118	110	67	31
Total	16,993	4	3	26	185	248	398	701	1,155	1,719	2,333	2,756	3,131	2,428	1,307	599
47 Larynx (3)	245	—	—	—	4	6	11	27	30	26	41	35	29	22	8	6
47 Lung (4)	823	1	2	8	21	16	38	56	106	111	148	119	100	58	30	9
47 Others (5)	117	1	—	2	1	6	2	12	13	10	17	21	17	12	2	1
Total	1,185	2	2	10	26	28	51	95	149	147	206	175	146	92	40	16
48 Uterus	4,462	1	1	11	64	160	344	519	641	602	668	513	449	280	145	64
49 Ovary and Fallopian Tube	1,687	3	4	19	63	64	126	172	270	240	239	184	142	115	29	17
49 Vulva and Vagina ..	433	1	1	—	2	5	9	11	28	46	52	74	86	68	30	20
49 Others	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Total	2,121	4	5	19	65	69	135	183	298	286	292	258	228	183	59	37
50 Breast	6,922	—	1	3	96	213	393	618	843	971	945	866	810	568	342	253
52 Skin	510	1	1	6	16	11	5	16	24	44	52	47	59	80	71	77
53 Brain, Meninges ..	140	1	10	12	17	12	9	20	22	11	17	7	2	—	—	—
53 Thyroid	184	—	—	—	2	2	4	9	15	19	32	34	34	16	12	5
53 Kidney, suprarenal ..	312	15	13	6	9	5	7	23	31	43	36	44	34	34	10	2
53 Bladder, Urethra ..	459	—	—	—	6	5	10	10	25	50	54	99	97	58	32	13
53 Bones (jaw excepted) ..	435	4	18	27	23	11	20	21	42	47	47	57	44	40	24	10
53 Others (6) and unspecified	499	4	6	8	19	13	18	29	42	56	62	62	75	54	33	18
Total	2,029	24	47	53	76	48	68	112	177	226	248	303	286	202	111	48

(1) Includes Palate, Cheek (internal surface), Salivary Glands, Gums.
(2) ,, Intestine undefined, Peritoneum, Omentum, Mesentery, Anus.
(3) ,, Trachea.
(4) ,, Pleura.
(5) Mediastinum.
(6) Includes Lymphatic Glands, Abdomen, Eye, Muscle, etc.

Table LXI.—Forms of Fatal Cancer of each Site—1937.

—	Males.						Females.					
	Number of Deaths.			Percentage of all Cancers.			Number of Deaths.			Percentage of all Cancers.		
	Carcinoma.	Sarcoma.	"Cancer" not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer" not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer" not otherwise defined.	Carcinoma.	Sarcoma.	"Cancer" not otherwise defined.
All Sites	28,148	1,544	2,497	87	5	8	31,018	1,201	2,583	89	3	8
45 Lip	251	—	6	98	—	2	20	—	2	91	—	9
Tongue	916	—	64	93	—	7	133	—	4	97	—	3
Mouth	331	—	21	94	—	6	37	—	4	90	—	10
Tonsil	210	17	10	89	7	4	33	9	2	75	20	5
Jaw	278	67	27	75	18	7	130	29	10	77	17	6
Pharynx	349	6	21	93	2	5	118	12	8	85	9	6
Others	193	5	12	92	2	6	26	2	1	90	7	3
Total	2,528	95	161	91	3	6	497	52	31	86	9	5
46 Œsophagus	1,570	4	129	92	0	8	654	1	61	91	0	9
Stomach	6,638	5	420	94	0	6	5,400	5	343	94	0	6
Small intestine	76	5	9	84	6	10	78	6	6	86	7	7
Cæcum	317	2	16	94	1	5	424	1	24	95	0	5
Hepatic flexure ..	57	—	1	98	—	2	65	—	4	94	—	6
Splenic flexure ..	91	—	7	93	—	7	117	—	7	94	—	6
Sigmoid flexure	730	2	36	95	0	5	748	2	52	93	0	7
Large intestine (colon)	2,486	5	176	93	0	7	3,222	2	181	95	0	5
Rectum (excluding anus)	3,236	4	218	94	0	6	2,025	1	123	94	0	6
Liver	934	12	142	86	1	13	981	13	139	87	1	12
Gall bladder	254	1	29	90	0	10	528	1	55	90	0	10
Pancreas	1,021	1	74	93	0	7	921	2	66	93	0	7
Others	379	72	74	72	14	14	525	70	140	71	10	19
Total	17,789	113	1,331	92	1	7	15,688	104	1,201	92	1	7
47 Larynx	860	3	68	93	0	7	228	—	17	93	—	7
Lung	2,623	78	229	89	3	8	705	25	93	86	3	11
Others	133	58	117	43	19	38	51	13	53	44	11	45
Total	3,616	139	414	87	3	10	984	38	163	83	3	14
48 Uterus	—	—	—	—	—	—	4,125	70	267	92	2	6
49 Ovary	—	—	—	—	—	—	1,466	31	190	87	2	11
Vulva	—	—	—	—	—	—	413	5	15	95	1	4
Others	—	—	—	—	—	—	1	—	—	100	—	—
Total	—	—	—	—	—	—	1,880	36	205	88	2	10
50 Breast	53	6	1	88	10	2	6,434	23	465	93	0	7
51 Kidney, suprarenal ..	147	211	47	36	52	12	—	—	—	—	—	—
Bladder, urethra, ureter	923	19	84	90	2	8	—	—	—	—	—	—
Prostate	1,759	14	223	88	1	11	—	—	—	—	—	—
Testis	114	66	17	58	34	8	—	—	—	—	—	—
Penis	155	3	7	94	2	4	—	—	—	—	—	—
Scrotum	66	—	2	97	—	3	—	—	—	—	—	—
Total	3,164	313	380	82	8	10	—	—	—	—	—	—
52 Skin	581	61	15	89	9	2	414	87	9	81	17	2
53 Brain, meninges ..	18	133	70	8	60	32	5	93	42	4	66	30
Thyroid	55	1	7	87	2	11	159	6	19	86	3	11
Kidney, suprarenal ..	—	—	—	—	—	—	112	156	44	36	50	14
Bladder, urethra, ureter	—	—	—	—	—	—	413	8	38	90	2	8
Bones (jaw excepted) ..	61	362	21	14	81	5	81	329	25	19	76	5
Others	283	321	97	40	46	14	226	199	74	45	40	15
Total	417	817	195	29	57	14	996	791	242	49	39	12

Table LXII.—Cancer Mortality: Rates per Million Population (Standardized) for the more important Sites for each Sex 1901–10, 1911–20, 1921–30, 1931, 1932, 1933, 1934, 1935, 1936 and 1937.

—	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
	All Sites.		Lip.		Tongue.		Mouth and Tonsil, etc. (1)		Jaw.	
1901–10	784	942	12·8	0·8	43·1	4·4	?	?	22·6	6·9
1911–20	897	959	12·6	0·7	50·8	4·3	23·5	3·0	25·1	7·2
1921–30	1,000	980	11·4	0·7	45·9	3·8	28·2	3·6	20·7	6·3
1931	1,034	974	10·7	0·5	38·1	3·6	29·4	3·5	16·5	5·1
1932	1,052	966	10·3	0·6	37·6	3·4	29·4	3·7	16·6	5·2
1933	1,035	973	8·7	0·7	35·7	3·6	26·4	3·6	15·2	4·8
1934	1,046	974	10·5	0·8	37·4	3·7	26·7	3·3	14·4	5·3
1935	1,058	959	10·2	0·4	34·7	3·3	27·6	3·7	13·6	4·6
1936	1,068	969	8·7	0·5	31·8	4·0	27·0	4·0	13·4	5·6
1937	1,071	951	8·5	0·5	31·4	3·5	25·5	3·2	12·3	4·7
	Pharynx.		Œsophagus.		Stomach.		Liver.		Gall-bladder.	
1901–10	?	?	51·2	14·6	167·2	133·0	?	?	?	?
1911–20	10·8	3·0	60·6	16·5	186·4	139·0	87·1	98·0	6·0	11·6
1921–30	12·6	3·0	64·1	18·0	220·2	154·2	60·7	60·3	8·7	16·4
1931	13·0	3·1	62·8	18·7	231·3	155·5	47·0	42·7	9·2	16·9
1932	14·7	3·4	62·5	19·5	233·3	153·8	45·7	38·9	10·8	16·9
1933	12·8	3·4	57·8	18·3	229·2	156·7	45·5	36·8	9·6	16·5
1934	13·9	2·8	59·4	19·4	230·3	157·1	40·6	34·3	8·5	17·0
1935	13·6	3·4	59·2	19·3	236·5	152·8	40·3	32·4	9·3	16·6
1936	12·8	3·3	56·8	20·1	237·6	152·2	38·4	33·1	9·5	15·8
1937	12·2	4·0	54·3	19·0	232·7	149·6	35·6	29·2	9·3	14·9
	Mesentery and Peritoneum (2).		Intestine (3).		Rectum and Anus.		Ovary and Fallopian Tube.		Uterus.	
1901–10	8·2	15·8	63·5	72·3	79·8	55·9	—	19·2	—	?
1911–20	6·0	12·0	96·8	109·2	93·6	59·3	—	24·3	—	174·4
1921–30	5·4	8·1	124·8	128·5	105·0	59·3	—	36·1	—	157·7
1931	5·3	6·6	136·1	136·3	109·1	59·5	—	42·7	—	139·9
1932	4·6	6·3	136·8	133·9	113·5	59·8	—	43·3	—	137·8
1933	3·9	6·0	139·4	140·5	111·1	56·5	—	44·9	—	134·5
1934	4·2	5·5	138·9	141·5	111·3	59·0	—	47·5	—	135·8
1935	4·8	5·6	136·8	138·4	112·8	56·3	—	48·3	—	133·9
1936	4·2	5·8	145·0	138·1	110·2	56·8	—	51·8	—	128·1
1937	4·7	5·4	143·8	141·8	113·6	57·9	—	50·6	—	129·0
	Breast.		Rodent Ulcer.		Penis.		Scrotum.		Other Skin (4).	
1901–10	1·5	158·4	?	?	?	—	?	—	?	?
1911–20	1·6	170·8	6·7	4·3	6·6	—	2·4	—	17·6	10·9
1921–30	1·8	188·4	8·4	4·8	6·4	—	2·7	—	17·5	10 1
1931	2·3	200·2	9·0	4·7	6·5	—	2·6	—	17·5	9·2
1932	1·8	196·6	8·0	4·2	6·0	—	2·8	—	16·1	11·0
1933	2·0	197·9	7·2	3·9	5·7	—	2·3	—	15·6	9·9
1934	1·9	197·9	7·9	4·1	6·8	—	2·3	—	15·0	8·4
1935	2·7	196·0	7·2	4·0	6·0	—	2·1	—	14·3	8·9
1936	2·8	200·7	6·7	3·9	6·7	—	1·5	—	16·4	9·0
1937	2·0	192·9	5·7	3·6	5·4	—	2·3		16·9	9·8
	Larynx (only).		Lung (only).		Pancreas.		Kidney and Suprarenal.		Bladder.	
1901–10	?	?	10·2	7·0	14·5	11·8	8·4	7·6	?	?
1911–20	23·9	6·0	12·7	7·0	16·7	13·1	9·1	7·2	28·2	9·7
1921–30	31·2	7·1	25·1	9·6	26·3	19·4	11·7	8·8	30·3	11·3
1931	31·7	7·9	51·2	16·3	28·8	21·6	13·9	9·5	34·2	11·0
1932	30·7	7·2	57·0	17·2	32·0	23·1	13·7	10·1	32·0	11·2
1933	30·8	7·1	66·8	17·6	32·4	24·7	14·1	10·3	32·5	12·0
1934	30·7	7·3	75·3	20·3	33·0	23·5	15·8	10·2	33·6	10·5
1935	29·5	6·8	82·2	22·2	34·4	24·6	13·6	9·2	32·9	10·8
1936	29·5	8·2	90·1	23·6	36·0	26·2	14·6	9·6	33·0	12·0
1937	29·8	6·7	100·9	23·2	36·1	25·5	14·8	10·0	33·3	11·4
	Prostate.		Testis.		Bones (5).		Mediastinum.			
1901–10	11·8	—	?	—	?	?	8·1	4·5		
1911–20	26·5	—	4·9	—	15·7	12·0	9·2	4·6		
1921–30	47·3	—	5·8	—	17·5	13·4	12·6	5·8		
1931	56·4	—	5·9	—	16·5	11·7	11·4	4·6		
1932	58·5	—	6·8	—	16·8	13·3	9·8	4·0		
1933	57·4	—	6·6	—	16·4	13·0	9·8	4·1		
1934	56·2	—	6·5	—	17·6	12·2	8·8	4·1		
1935	62·1	—	6·4	—	18·1	14·7	8·9	3·5		
1936	62·7	—	6·8	—	20·2	14·5	7·9	3·4		
1937	64·1	—	8·5	—	18·1	14·2	10·7	3·4		

NOTES :—(1) Includes palate, cheek (internal surface), salivary glands, gums (see Table LX, note (1)).
(2) Omentum.
(3) ,, Duodenum, small intestine, cæcum, colon, hepatic, splenic and sigmoid flecures, and intestine (undefined).
(4) ,, Face, nose, scalp, ear, neck, trunk, upper limb and lower limb.
(5) ,, Skull, spinal column, rib, sternum, clavicle, scapular, pelvis, arm, leg (undefined).

Effect of Multiple Cause classification on Cancer death rates.—When combined with some other disease as cause of death cancer takes precedence over almost all diseases in accordance with Rule 6 (Manual of the International List). The cancer deaths tabulated approximately represent, therefore, the deaths of persons who have been suffering from cancer rather than the deaths due to cancer. In some instances the certifying physician regards the cancer as merely a contributory cause not directly connected with the principal cause, and such deaths would not be classed to cancer but to the other cause by a literal reading of the certificates. Classification of deaths according to the order of statement of causes as certified rather than by the use of selective rules would reduce the number of deaths assigned to cancer in 1937 from 66,991 to 64,376 or by 4 per cent., the groups most affected being cancer of the skin (from 1,167 to 984, or by 16 per cent.) and of the breast (from 6,982 to 6,506, or by 7 per cent.)

Site Distribution of Cancer in Large Towns and Other Areas of England and Wales 1921–30 *and* 1937. See page 171.

54, 55.—**Tumours not returned as malignant.**—Table LXIII analyses according to sex, age, and site of the tumour all deaths from new growths not definitely stated to be malignant which were assigned to No. 54, Non-malignant tumours, and to No. 55, Tumours of undetermined nature, during 1937, the criterion of malignancy being that defined in the Manual of the International List of Causes of Death (1929 Revision). The non-malignant group numbered 1,489, the pathological variety of the tumour being specified in 1,394 instances (" classified tumours ") and the growth merely described as benign in 95 (" benign, unclassified "). Table XC shows that inquiries concerning tumours of unstated nature resulted in 806 being assigned to cancer and 95 to glioma, but for 1,079 deaths the malignant or non-malignant nature of the growth could not be ascertained by inquiry and these were assigned to No. 55 and are analysed under the description "nature unstated " in Table LXIII. The arrangement of the latter table differs slightly from that used in the corresponding tables in 1931–34 where " other benign " or " non-malignant " tumours included types of classified tumours for which the deaths during the year numbered less than 3. Full details of the classified tumours are now shown for the uterus, brain, pituitary and spinal cord, and are available for these and all other sites in detail for each year since 1921.

Adenoma, myo-adenoma, fibro-adenoma and fibroid of the prostate are classed to No. 137, Diseases of the prostate, because these conditions seem to be scarcely distinguishable from that described as prostatic hypertrophy. Other non-malignant or undefined tumours of the prostate are included in Table LXIII. Adenoma of the thyroid is also not included in this table but is assigned to No. 66 (*a*), Simple goitre.

Table LXIII.—Deaths attributed to Tumours not returned as Malignant, and classed to No. 54 Non-malignant tumours and No. 55 Tumours of undetermined nature, 1937.

List No.			All Ages.		0–		15–		35–		45–		55–		65–		75 and up	
			M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
54*a*	Ovary	Cyst, cystic tumour	—	219	—	1	—	21	—	27	—	31	—	44	—	48	—	47
,,		Fibroid, Fibroma	—	6	—	—	—	—	—	1	—	—	—	1	—	3	—	1
,,		Other classified tumours	—	8	—	—	—	1	—	1	—	4	—	1	—	1	—	—
,,		Benign (unclassified)	—	8	—	—	—	—	—	—	—	1	—	3	—	—	—	4
55*a*		*Nature unstated*	—	6	—	—	—	—	—	—	—	2	—	1	—	1	—	2
54*a*	Uterus	Fibroid*	—	331	—	—	—	14	—	97	—	136	—	33	—	23	—	28
,,		Endometrioma	—	6	—	—	—	1	—	3	—	2	—	—	—	—	—	—
,,		Myoma	—	11	—	—	—	2	—	2	—	3	—	3	—	1	—	—
,,		Polypus	—	6	—	—	—	—	—	2	—	—	—	2	—	1	—	1
,,		Other classified tumours	—	3	—	—	—	—	—	2	—	1	—	—	—	—	—	—
,,		Benign (unclassified)	—	3	—	—	—	—	—	—	—	1	—	—	—	1	—	1
55*a*		*Nature unstated*	—	4	—	—	—	—	—	1	—	1	—	1	—	1	—	—
54*a*	Broad ligament	Cyst	—	8	—	—	—	—	—	5	—	3	—	—	—	—	—	—
54*a*	Vagina	Cyst	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
		Other classified tumours	—	3	—	—	—	2	—	—	—	—	—	1	—	—	—	—
55*a*	"Pelvis"	*Nature unstated*	—	2	—	—	—	—	—	—	—	—	—	1	—	—	—	1
54*b*	Brain	Angioma, Hæmangioma	5	3	1	—	2	1	1	1	1	—	—	—	—	1	—	—
,,		Cyst, cystic tumour	25	14	6	5	7	4	2	1	6	3	2	—	2	—	—	1
,,		Astrocytoma	14	21	1	1	3	7	5	7	2	4	3	2	—	—	—	—
,,		Cholesteatoma	2	3	1	—	1	—	—	—	—	2	—	1	—	—	—	—
,,		Endothelioma (non-malignant)	3	3	—	—	—	—	1	—	—	3	1	—	—	—	1	—
,,		Ependymoma	3	2	—	—	1	—	—	—	1	2	1	—	—	—	—	—
,,		Glioblastoma	13	6	—	—	2	1	3	1	2	2	6	2	—	—	—	—
,,		Glioma†	150	122	8	11	25	24	29	25	42	23	35	24	10	13	1	2
,,		Medulloblastoma	3	1	1	1	2	—	—	—	—	—	—	—	—	—	—	—
,,		Meningioma	3	8	1	—	1	1	—	—	1	3	—	4	—	—	—	—
,,		Neurofibroma	4	1	—	—	1	—	—	—	—	1	1	—	2	—	—	—
,,		Psammoma	—	3	—	—	—	—	—	1	—	—	—	—	—	—	—	2
,,		Other classified tumours‡	5	5	—	—	—	1	1	2	2	2	1	—	1	—	—	—
,,		Benign (unclassified)	15	13	1	1	8	4	1	1	3	2	2	3	—	2	—	—
55*b*		*Nature unstated*	427	427	37	36	78	67	61	57	103	98	110	97	33	59	5	13
54b	Pituitary gland	Adenoma	4	11	—	—	—	3	3	3	1	3	—	2	—	—	—	—
,,		Other classified tumours§	1	3	—	—	1	2	—	—	—	—	—	—	—	—	—	1
,,		Benign (unclassified)	8	8	—	1	3	1	1	2	2	2	2	2	—	—	—	—
55*b*		*Nature unstated*	8	4	—	—	3	1	2	—	1	3	2	—	—	—	—	—
54*b*	Thyroid	Classified tumours	1	2	—	—	—	1	—	—	—	—	1	—	—	—	—	1
,,		Benign (unclassified)	—	2	—	—	—	—	—	—	—	1	—	1	—	—	—	—
55*b*		*Nature unstated*	2	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—
54*b*	Spinal Cord	Glioma	4	1	—	—	3	1	—	—	—	—	1	—	—	—	—	—
,,		Other classified tumours‖	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—
,,		Benign (unclassified)	3	3	—	—	1	—	—	2	—	—	—	1	1	—	1	—
55*b*		*Nature unstated*	8	1	—	—	—	1	2	—	2	—	2	—	2	—	—	—
54*b*	Nose	Polypus	12	8	—	—	3	3	1	2	3	1	5	—	—	2	—	—
55*b*		Nature unstated	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
54*b*	Larynx	Classified tumours	1	3	—	2	—	—	—	—	—	—	—	—	1	1	—	—
55*b*		*Nature unstated*	3	1	—	—	—	—	1	—	1	—	—	—	—	—	1	1
54*b*	Mediastinum	Classified tumours	1	1	—	—	—	1	1	—	—	—	—	—	—	—	—	—
,,		Benign (unclassified)	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
55*b*		*Nature unstated*	29	17	—	—	2	1	2	1	12	6	10	2	3	7	—	—
54*b*	Lung	Classified tumours	3	1	—	—	2	—	—	—	1	—	—	1	—	—	—	—
,,		Benign (unclassified)	2	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—
55*b*		*Nature unstated*	33	6	—	—	—	—	3	—	8	—	13	—	8	4	1	2
54*b*	Parotid	Classified tumours	3	3	—	—	—	—	—	1	—	—	1	—	—	1	2	1
,,		Benign (unclassified)	1	2	—	—	—	—	—	—	—	—	—	—	—	1	1	1
55*b*		*Nature unstated*	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—

* Includes Fibroma; † Includes Oligodendroglioma, M.15–, F.15–; ‡ Hæmatoma, M.45–, 65–; Neuroglioma, M.55–, F.45–; Papilloma, F.35–; Pinealoma, M.35–; Spongioblastoma, M.45–, F.35–; Spongioglioma, F.15–; § Cyst, M.15–, 2 F.15–; Psammoma, F. 75–; ‖ Cyst, F.15–.

Table LXIII.—*continued.*

List No.			All Ages.		0–		15–		35–		45–		55–		65–		75 and up	
			M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
54*b*	Stomach	Classified tumours.. ..	1	1	—	—	—	—	—	—	—	—	—	1	1	—	—	—
55*b*		*Nature unstated*	—	3	—	—	—	—	—	—	—	—	—	—	—	2	—	1
54*b*	Intestine	Classified tumours.. ..	2	1	—	—	—	1	—	—	—	—	—	—	—	—	2	—
,,		Benign (unclassified) ..	1	2	—	—	—	—	—	1	1	—	—	1	—	—	—	—
55*b*		*Nature unstated*	3	8	—	—	—	—	—	—	—	—	1	—	—	4	2	4
54*b*	Rectum	Classified tumours.. ..	6	4	—	2	1	—	1	—	—	—	—	—	1	1	3	1
,,		Benign (unclassified) ..	2	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—
55*b*		*Nature unstated*	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
54*b*	Colon	Classified tumours ..	3	2	—	—	—	—	1	—	1	—	1	2	—	—	—	—
,,		Benign (unclassified) ..	1	1	—	—	—	—	—	—	1	—	—	—	—	1	—	—
55*b*		*Nature unstated*	2	5	—	—	—	—	—	—	—	—	1	2	1	1	—	2
54*b*	Liver	Classified tumours.. ..	1	2	1	—	—	1	—	—	—	—	—	—	—	—	—	1
55*b*		*Nature unstated*	1	3	—	1	—	—	—	—	—	—	1	1	—	1	—	—
54*b*	Pancreas	Classified tumours.. ..	2	9	—	—	—	—	—	1	—	1	1	4	—	1	1	2
,,		Benign (unclassified) ..	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
54*b*	Kidney	Classified tumours.. ..	2	7	—	—	—	—	—	1	—	1	1	2	—	3	1	—
55*b*		*Nature unstated*	6	2	—	—	—	—	—	—	1	—	4	1	1	—	—	1
54*b*	Adrenal	Benign (unclassified) ..	3	2	—	—	2	1	—	1	1	—	—	—	—	—	—	—
55*b*		*Nature unstated*	—	2	—	—	—	1	—	—	—	—	—	1	—	—	—	—
54*b*	Bladder	Classified tumours.. ..	114	35	—	—	2	1	2	1	7	—	28	5	34	8	41	20
,,		Benign (unclassified) ..	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
55*b*		*Nature unstated*	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—
54*b*	Testicle	Classified tumours ..	4	—	—	—	1	—	—	—	—	—	1	—	2	—	—	—
54*b*	Breast	Classified tumours.. ..	—	6	—	—	—	—	—	—	—	2	—	—	—	1	—	3
54*b*	Jaw	Classified tumours ..	1	2	—	—	—	1	—	—	—	—	—	—	1	1	—	—
55*b*		*Nature unstated*	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
54*b*	Spine	Classified tumours.. ..	7	3	—	—	—	2	1	1	—	—	3	—	1	—	2	—
,,		Benign (unclassified) ..	1	4	—	—	1	—	—	1	—	1	—	—	—	2	—	—
55*b*		*Nature unstated*	4	4	—	—	1	—	2	—	—	—	1	2	—	2	—	—
54*b*	Neck	Classified tumours.. ..	1	3	1	—	—	—	—	—	—	—	—	1	—	2	—	—
54*b*	Abdomen	Classified tumours.. ..	1	2	1	1	—	—	—	—	—	—	—	—	—	—	—	1
55*b*		*Nature unstated*	4	20	—	—	—	1	—	1	—	1	—	5	3	6	1	6
54*b*	Other sites ..	Classified tumours.. ..	42	37	9	12	7	5	5	5	7	5	7	6	6	3	1	1
,,		Benign (unclassified) ..	5	2	—	—	1	—	—	1	1	—	1	1	—	—	2	—
55*b*		*Nature unstated*	16	8	—	1	—	—	—	—	5	—	3	3	3	4	5	—
54*b*	Site not stated ..	Classified tumours.. ..	3	2	1	—	—	—	—	—	—	1	1	—	—	1	1	—
55*b*		*Nature unstated*	2	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—
54, 55	Total (54 and 55)		1,048	1,520	70	76	167	181	133	263	222	358	255	272	120	216	81	154
	Total classified benign tumours ..		450	944	32	36	65	103	57	194	77	239	101	142	62	116	56	114
	,, unclassified ,, ,, ...		45	50	1	2	18	6	3	9	10	8	6	12	2	7	5	6
54	,, benign tumours		495	994	33	38	83	109	60	203	87	247	107	154	64	123	61	120
55	,, nature unstated		553	526	37	38	84	72	73	60	135	111	148	118	56	93	20	34

Table LXIV brings together all deaths from tumours of the brain (or meninges), whether classed to No. 53, Cancer, No. 54, Non-malignant tumours or No. 55, Tumours of undetermined nature, in each year 1921 to 1937. During this period the annual number of deaths from tumours in the last group has remained almost unchanged, but those attributed to cancer and classified tumours other than " glioma " have rapidly increased. The number included under the glioma heading has not changed greatly since 1928. The combined crude death rate at all ages from all tumours of

the brain has risen from 32 to 45 per million for males and from 28 to 36 for females.

Deaths ascribed to pituitary tumour other than cancer have increased from 16 in 1921 to 47 in 1937. Deaths from tumour of the lung not described as malignant increased from numbers ranging between 11 and 21 during 1912–19 to 97 in 1934 but fell to 45 in 1937. Like lung cancer, which has also increased rapidly (Table LXII), they affect males much more than females. The ratios of malignant to benign tumours of the mediastinum, lung, and abdominal organs suggest that large proportions of those returned as of unknown nature were probably malignant.

Table LXIV.—Deaths classed to Cancer, Glioma and Other Tumours of the Brain and Mortality per Million living from all tumours of the Brain, 1921–37.

	No. of Deaths.										Rate per million (all ages).	
	Classed to Cancer (No. 53).		Glioma* (No. 54*b*).		Other classified† or "Benign" tumours (No. 54*b*).		Nature unstated (No. 55*b*).		All Tumours.		All Tumours.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1921	52	44	89	57	24	15	408	437	573	553	32	28
1922	66	45	72	73	15	18	429	421	582	557	32	28
1923	77	52	100	71	17	8	424	445	618	576	34	29
1924	77	51	94	84	29	14	430	400	630	549	34	27
1925	65	55	105	80	24	14	389	423	583	572	31	28
1926	51	56	110	93	18	21	447	445	626	615	33	30
1927	82	72	146	104	16	22	420	450	664	648	35	32
1928	91	63	181	131	27	30	434	427	733	651	39	32
1929	81	79	154	138	29	34	443	441	707	692	37	34
1930	90	70	206	131	33	23	427	453	756	677	40	33
1931	103	76	193	139	43	34	417	420	756	669	39	32
1932	120	96	206	130	49	43	395	426	770	695	40	33
1933	155	117	149	142	47	49	441	409	792	717	41	34
1934	141	120	163	129	54	55	439	446	797	750	41	36
1935	165	142	167	140	53	37	430	427	815	746	42	35
1936	197	158	162	126	61	64	430	463	850	811	43	38
1937	221	140	153	125	92	80	427	427	893	772	45	36

* Includes, in this table, glioma, cystic glioma, spongioglioma, oligodendroglioma, ependymoma (even if stated to be benign).

† Includes angioma, cyst, astrocytoma, meningioma, blastocystoma, fibroma, adenoma, neuroma, psammoma, cholesteatoma, non malignant endothelioma, glioblastoma, astroblastoma, etc.

56. **Rheumatic Fever and Heart Disease.**—Deaths assigned to rheumatic fever numbered 917 in 1937 compared with annual averages of 1,551 in 1926–30, 1,249 in 1931–35 and 1,142 in 1936. The standardized death rate of males has fallen from 54 per million in 1920 to 22 in 1937, and for females from 59 to 27 in the same period. The trend of mortality at different ages is shown in Table LXV where death rates are compared for each sex at intervals of 20 years, namely in 1891–1900, 1911–20 and 1935–36. Since

1911–20 there has been a decline in mortality at every age period for each sex, but the proportionate decrease has been much greater at ages after 35 than in childhood. The decline of mortality at the school ages was arrested between 1911 and 1930, no improvement having occurred from 1911–20 to 1928–30, but a rapid fall has been evident in recent years. For young adult males the fall has been continuous, and this has also been true of young adult females since 1925–27. This is shown by the following series of rates per million living.

	Ages 5–15		Ages 15–25	
	Males	Females	Males	Females
1911–20	69	79	54	63
1925–27	75	90	49	60
1928–30	69	83	41	52
1931–33	57	62	36	49
1934–36	56	74	36	43
1937	41	49	25	33

The decline in 1937 compared with 1935–36 was evident at almost all ages.

Table LXV.—Rheumatic Fever: Mean Annual Mortality per Million living by Sex and Age, 1891-1900, 1911-20, 1935-36.

Ages	Males				Females			
	1891–1900	1911–20	1935–36	1937	1891–1900	1911–20	1935–36	1937
All ages (standardized.)	89	48	29	22	83	51	33	27
0–	20	18	15	15	20	14	12	9
5–	74	61	53	42	76	63	58	43
10–	92	78	58	40	109	95	72	54
15–	97	64	43	35	112	73	48	34
20–	80	41	29	14	80	53	37	31
25–	96	38	18	19	73	40	21	17
35–	110	42	17	12	85	41	19	21
45–	102	50	20	12	97	48	21	17
55–	116	53	18	11	100	51	21	18
65–	142	50	24	14	120	45	15	20
75 and over	148	33	11	11	111	41	19	22

Deaths from rheumatic heart disease are only classed to rheumatic fever when the heart affection is designated as " acute (or subacute) rheumatic," or when it is stated or found on inquiry that rheumatic fever was present at the time of death. On the other hand when rheumatic fever or chronic rheumatism is mentioned as a

cause of chronic heart disease, rheumatic fever not being stated to be present at the time of death, classification is made to the heart disease group, the great majority of deaths from chronic endocarditis having no mention of rheumatism although many were of rheumatic origin. Out of a sample of 12,889 deaths classed to heart disease in 1924 (including 4,815 from endocarditis or valvular disease) only 137 of the certificates mentioned rheumatism as the cause of the heart lesion. Since rheumatism is so rarely mentioned as the cause of chronic endocarditis, although it is usually implied, no significance can be attached to its mention for purposes of classification, and it is impossible from death certificates alone to do more than estimate the proportion of all heart disease deaths which are of remote rheumatic origin. In the alternative tabulation carried out in 1937 according to the order of preference of causes stated by the certifying physician, an exception has, therefore, been made in the case of rheumatism in conjunction with heart disease, bearing in mind the definition of the rheumatic fever heading (namely that it is intended to include only those heart disease deaths where rheumatic fever was stated to have been present at the time of death) and mention of rheumatism as a cause of chronic heart disease has been ignored as heretofore. With this necessary proviso no appreciable change would result in rheumatic fever death rates by a system of classification in accordance with the physician's preference, the deaths in 1937 being reduced from 917 to 880.

59. **Diabetes.**—The deaths allocated to this disease numbered 7,296, 2,801 of males and 4,495 of females, corresponding to standardized death-rates of 96 for males and 121 for females. This rate has been in excess for females in each year from 1923 onwards, whereas before that date excess for males was an invariable rule, though its amount had long been decreasing.

The trend of diabetes mortality since 1861–70 was discussed in the Review for 1933. At ages under 45 male standardized mortality increased until 1891–1900, remained stationary until 1912, and then rapidly increased to 1915. The rates of the next 5 years, relating to civilians only, were greatly influenced by selection, but from 1920 to 1922 the rate was again rising. The introduction of insulin in 1923 was accompanied by a drop from 41 per million in 1922 to 26 in 1924 and a further gradual fall occurred to 17 in 1936, but in 1937 the rate rose to 19. At ages 45–55 male mortality behaved similarly; it remained stationary, about 160 per million, from 1891–1900 to 1913, fluctuated during 1914–20 and had not quite regained its former level by 1922. The following years witnessed a drop from 143 to a mean level of 88 in 1926–28, rising slightly to 90 in 1931–33 and 93 in 1934–36, but falling to 87 in 1937 (Table LXVI).

Mortality of females at ages under 45, steadily increased until 1901–10, when the standardized rate was 32 per million, and fluctuated about that level during the next decade. With the use of insulin the rate fell from 34 in 1922 to 25 in 1924, and has recently

Table LXVI.—Mortality from Diabetes in 1920–22 and in subsequent years.

	Standardized Rates.			0–	15–	25–	35–	45–	55–	65–	75 and up
	All ages	0–55	55 and up								
	DEATH-RATES PER MILLION LIVING.										
Males :—											
1920–22 ..	93·7	47·9	477·5	14	42	60	69	133	309	661	772
1931 ..	88·1	29·5	580·3	12	22	30	38	97	315	821	1,161
1932 ..	92·4	28·9	625·6	10	21	30	45	93	320	897	1,310
1933 ..	92·3	28·5	628·2	13	26	30	36	80	325	888	1,326
1934 ..	91·0	27·2	627·0	10	22	27	32	94	331	889	1,292
1935 ..	89·5	24·2	637·4	10	16	24	30	87	321	919	1,344
1936 ..	94·6	24·7	680·8	10	16	24	26	97	320	968	1,569
1937 ..	95·7	26·2	680·2	11	17	26	39	87	325	967	1,543
Females :—											
1920–22 ..	90·1	43·1	483·9	16	35	48	62	124	355	656	632
1931 ..	110·9	33·4	762·0	11	26	31	45	121	473	1,097	1,218
1932 ..	112·4	32·5	783·3	13	20	29	46	118	485	1,143	1,219
1933 ..	114·3	33·5	793·0	12	25	30	48	118	470	1,178	1,275
1934 ..	114·9	30·7	821·4	10	18	28	44	123	490	1,204	1,344
1935 ..	117·0	30·4	844·3	9	21	29	39	120	499	1,236	1,410
1936 ..	120·1	29·6	879·6	9	19	23	46	118	496	1,323	1,486
1937 ..	121·1	31·3	875·3	12	21	23	39	129	477	1,295	1,607
	MORTALITY OF LATER YEARS PER CENT. OF THAT IN 1920–22.										
Males :—											
1923 ..	96	79	110	79	79	80	87	74	104	113	114
1924 ..	92	72	108	64	69	63	75	83	104	105	122
1925 ..	87	67	104	79	52	72	62	70	93	106	120
1926 ..	92	68	112	93	67	60	70	68	105	112	124
1927 ..	94	67	116	79	74	68	58	63	107	116	133
1928 ..	97	63	126	93	60	55	55	68	107	136	140
1929 ..	101	73	125	86	60	60	90	79	106	130	150
1930 ..	99	65	128	71	57	63	59	74	109	130	154
1931 ..	94	62	122	86	52	50	55	73	102	124	150
1932 ..	99	60	131	71	50	50	65	70	104	136	170
1933 ..	99	59	132	93	62	50	52	60	105	134	172
1934 ..	97	57	131	71	52	45	46	71	107	134	167
1935 ..	96	51	133	71	38	40	43	65	104	139	174
1936 ..	101	52	143	71	38	40	38	73	104	146	203
1937 ..	102	55	142	79	40	43	57	65	105	146	200
Females :—											
1923 ..	104	95	112	69	86	92	95	115	110	112	116
1924 ..	98	75	116	69	80	67	76	80	110	118	116
1925 ..	104	80	122	69	86	67	85	90	111	131	128
1926 ..	101	74	121	56	71	73	82	80	113	127	128
1927 ..	112	76	139	69	71	67	73	91	131	135	173
1928 ..	112	79	138	69	74	69	66	102	118	147	163
1929 ..	123	81	155	69	63	65	84	106	135	157	196
1930 ..	119	72	155	69	51	56	71	99	131	165	193
1931 ..	123	77	157	69	74	65	73	98	133	167	193
1932 ..	125	75	162	81	57	60	74	95	137	174	193
1933 ..	127	78	164	75	71	63	77	95	132	180	202
1934 ..	128	71	170	63	51	58	71	99	138	184	213
1935 ..	130	71	174	56	60	60	63	97	141	188	223
1936 ..	133	69	182	56	54	48	74	95	140	202	235
1937 ..	134	73	181	75	60	48	63	104	134	197	254

declined further to 20 in 1936 and 1937. At ages 45–55 the rate was steadily rising up to 1913, then rapidly declined during 1915–18 but increased again almost as quickly in the succeeding years to 1923. The fall which then occurred has not been so well maintained as at the earlier ages; the introduction of insulin interrupted for several years the upward trend of registered mortality at this age period, just as food restriction and other factors had done in 1915–18.

At ages 55–65 mortality steadily increased up to 1915 for both sexes, declined abruptly in the period of food restriction, and was again rising from 1920 to 1922 (Review for 1933, Diagram 4). From 1923 onwards the male rate at 55–65 has not appreciably changed, whilst the female rate increased by 35 per cent. in excess of 1920–22 by 1929 and has fluctuated about that level since. Male mortality at ages over 65, which had not regained the 1911–14 level by 1922, remained stationary until 1925 and then rose rapidly to 1928. At 65–75 the male rate then showed little change until 1936, when it again rose to 968, remaining at 967 in 1937, whilst at 75 and over the rate continued to rise to the high level of 1,569 per million in 1936 with a slight fall in 1937. The rise in the female rates at these ages has been sustained with few interruptions since 1918.

The reasons for the continuous increase in death rates assigned to diabetes have been frequently commented upon, but it has not been possible to estimate how much of this has been due to a rising incidence of diabetes, how much to an increasing recognition of the disease as the real cause of death and how much to increasing mention of it on death certificates as a subsidiary cause. The selective rules for classification of multiple cause deaths give precedence to diabetes over most important causes except acute infective diseases, cancer, rheumatic fever and acute ileus, and this tends to exaggerate the mortality assigned to diabetes and to make the rates represent the mortality of diabetics rather than the mortality due to the disease. When a diabetic dies from pneumonia or heart disease mention is usually made of diabetes on the certificate, but very often it will be entered, and rightly so, as a contributory cause not directly connected with the disease responsible for death. As was shown in the Review for 1936, about 35 per cent. of deaths classed to diabetes in 1912 had some associated cause mentioned on the certificate, and by 1924 this proportion had increased to 43 per cent., being over 50 per cent. at advanced ages. The alternative tabulation of 1936 and 1937 deaths according to the certifying physician's opinion as to the essential cause where more than one disease is mentioned shows that a large proportion of the deaths now classed to diabetes by the use of the selective rules as set out in the Manual of the International List would be transferred to other causes if selection were in accordance with the preference expressed by the certifying physician.

		Males		Females		Persons
		1936	1937	1936	1937	1936–37
Deaths classed to diabetes by selective rules		2,731	2,801	4,388	4,495	14,415
Deaths included above with preference expressed for an associated cause	Number	944	1,018	1,378	1,503	4,843
	Per cent.	34·6	36·3	31·4	33·4	33·6
Deaths classed to other associated causes by selective rules but with preference expressed for diabetes		75	88	110	122	395
Net deduction of diabetes deaths according to physician's preference	Number	869	930	1,268	1,381	4,448
	Per cent.	31·8	33·2	28·9	30·7	30·9

The above figures imply that only two-thirds of the deaths at present classed to diabetes are thought by the attendant physician to be really attributable to the disease or to its direct results, diabetes being merely a contributory cause in the remaining third. On the other hand about 200 deaths per annum classed by rule to other causes associated with diabetes are thought to be the results of that disease, and allowing for this addition it appears that the death rate *due to* diabetes is about 69 per cent. of the tabulated rate (67·5 per cent. for males, 70·2 for females).

The 31 per cent. net transfer of diabetes deaths to other causes in 1936–37 does not, of course, represent all the deaths classed to diabetes with mention of some other cause, but only those in which the physician regarded the diabetes as merely contributory and not in the direct line of causation, and it is not, therefore, comparable with the proportions of 35 per cent. in 1912 and 43 per cent. in 1924 mentioned above. It seems most improbable, however, that in 1924 a transfer of less than half of the 43 per cent. of multiple cause deaths would have occurred if the physician's preference could then have been ascertained, and if that is so the corrected standardized death rate in 1924 would not have been more than 68 per million compared with about 75 at present. It would appear that the increase in the last decade cannot be entirely accounted for by increased mention of diabetes along with other causes combined with the high preference in selection, and an increasing incidence of the disease is probably occurring, prevented by modern treatment from enhancing the death rate at ages under 55 but not so prevented at later ages.

71(*a*). **Pernicious Anæmia.**—The progress of mortality since 1927, when a new and effective treatment came into use for this disease, is revealed in Table LXVII, where annual rates at various ages are expressed in terms of the corresponding rates in the triennium preceding 1927. The actual rates in greater detail of age in each year from 1922 to 1931 were shown in the Review for 1931, Table XLVIII. The standardized rates, which increased after the sudden fall registered in 1928, began to decline again in 1933 and have continued to fall since. The greatest relative decline in mortality has occurred at ages 25–45.

As in the case of diabetes, remedies are in general only effective in prolonging life so long as treatment is continued, and unless the patient eventually dies of some acute or general disease to which precedence is given in the classification of deaths due to joint causes, or without mention being made on the certificate of the pernicious anæmia, the expected effect on the mortality statistics would be a temporary reduction in annual deaths at each age, followed by a gradual return to the original total with a higher average age distribution. This assumes a constant incidence of new cases, whereas there is reason to believe that the number of recognised cases of pernicious anæmia and other blood diseases is

increasing. The total deaths registered in the 12 years 1926 to 1937 have numbered 2,780, 2,655, 1,854, 1,955, 2,150, 2,226, 2,591, 2,428, 2,385, 2,360, 2,258, 2,268, which indicates a return by 1932 almost to the 1927 level, and this suggests that any absolute reduction in the fatality of pernicious anæmia brought about by the new remedies was being balanced by an increased incidence or recognition of the disease. Since 1932, however, there has been a gradual decline in the total deaths.

Classification of multiple cause deaths according to the physician's choice of essential cause rather than by selective rules would reduce the total assigned to the pernicious anæmia group in 1937 from 2,268 to 1,965, or by 13 per cent.

Table LXVII.—Mortality from Pernicious Anæmia per Million living in 1931, 1932, 1933, 1934, 1935 and 1936 and per cent. of the rate for 1924–26 in each year 1927 to 1937.

	MALES.						FEMALES.					
	All Ages*	0–	25–	45–	65–	75 and up	All Ages*	0–	25–	45–	65–	75 and up
MORTALITY PER MILLION LIVING.												
1931 ..	34	3	13	98	311	301	43	5	27	134	328	231
1932 ..	39	5	13	111	368	339	49	5	29	149	379	235
1933 ..	35	3	13	104	317	322	46	4	30	130	367	326
1934 ..	34	5	12	94	306	325	44	5	26	126	349	371
1935 ..	32	5	10	82	329	339	43	5	25	114	353	387
1936 ..	31	4	10	71	317	404	40	3	24	106	328	375
1937 ..	29	5	8	74	273	368	40	5	20	101	351	442
MORTALITY PER CENT. OF THAT IN 1924–26.												
1927 ..	98	84	91	96	106	114	97	86	90	98	98	109
1928 ..	65	102	59	55	77	92	67	77	56	64	78	91
1929 ..	70	78	59	58	86	133	67	66	53	64	84	109
1930 ..	76	74	69	71	85	121	72	45	63	68	84	138
1931 ..	74	70	54	64	89	149	74	58	58	74	91	112
1932 ..	85	106	53	72	106	167	84	56	61	83	106	162
1933 ..	76	69	56	68	91	159	79	47	64	72	102	158
1934 ..	74	98	49	61	88	161	76	59	55	70	97	180
1935 ..	70	96	44	54	94	167	74	67	53	63	98	188
1936 ..	67	89	44	46	91	199	69	43	51	59	91	182
1937 ..	63	100	32	48	78	182	69	62	42	56	98	214

* Standardized.

The international group No. 71a, with heading "Pernicious Anæmia," on which all these statistics are based, includes also aplastic, essential or hæmolytic anæmias, Addison's anæmia and "progressive" or "profound" anæmias whose cause cannot be ascertained.

72 *b*(2). **Agranulocytosis (Agranulocytic Angina).**—The deaths attributed to this condition, alone or in association with other causes, numbered 2 in 1930, 3 in 1931, 7 in 1932, 31 in 1933 and 39 in 1934, the classification being in a few instances to causes such as pulmonary tuberculosis or lobar pneumonia with agranulocytosis as a contributory or associated cause.

Pending a clearer definition of the disease as an established clinical entity, the deaths were classed until the end of 1934 to sub-groups 115(3) or 115(4) when it was described as angina, or with the unclassified anæmias in No. 71 *b*(2) when described as agranulocytosis. Since the two descriptions are now regarded as synonyms, the angina being secondary to the blood condition, a new subgroup to comprise both descriptions, with title No. 72 *b*(2) Aleukæmia (agranulocytosis) has been introduced into Tables 6, 21 and 23 since 1935.

When other diseases are associated with agranulocytosis on a death certificate the same rules of precedence are now applied for assigning the death to its primary cause as for other defined blood diseases, and all the 82 deaths with mention of this cause which occurred during 1930–34, with one possible exception, would by these rules have been assigned to agranulocytosis as the principal cause. The complete record up to 1937 is given in Table LXVIII, and shows an increase to 52 deaths in 1935, 62 in 1936 and 56 in 1937.

Table LXVIII.—Deaths from Agranulocytosis by Sex and Age, in each year 1930 to 1937.

	1930.		1931.		1932.		1933.		1934.		1935.		1936.		1937.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
0– ..	—	—	—	—	—	—	—	2	—	—	—	1	2	—	1	1
5– ..	—	—	—	—	—	—	—	2	—	—	1	2	4	—	—	2
15– ..	—	—	—	—	1	1	2	3	4	2	1	4	6	2	1	3
25– ..	—	1	—	1	—	—	—	2	1	5	1	—	2	1	5	2
35– ..	—	—	—	1	—	1	1	—	1	4	2	6	2	4	5	6
45– ..	—	1	1	—	1	1	1	7	2	3	3	8	5	8	5	12
55– ..	—	—	—	—	—	2	—	5	3	5	7	10	5	7	3	4
65– ..	—	—	—	—	—	—	1	4	1	6	—	5	3	9	1	4
75 and up..	—	—	—	—	—	—	—	1	1	1	1	—	—	2	—	1
All ages	—	2	1	2	2	5	5	26	13	26	16	36	29	33	21	35

Of the 252 deaths 87 were of males and 165 of females, the period of greatest incidence in proportion to the population living being at ages 65–75.

75. **Alcoholism.**—This heading in the International List of causes of death excludes organic disease attributed to alcoholism, so, in order to obtain as complete information as possible with regard to mortality from over-indulgence in alcohol, all the deaths in certification of which any mention of alcohol appears are assembled in Table LXX. These numbered 535 in 1937, compared with 503 in 1936, 523 in 1935 and 494 in 1934. According to the order of preference expressed on the death certificates 22 of the 1,038 deaths in this table in 1936–37 were the direct results of alcoholism.

After 1926 the change in the form of the medical certificate produced a temporary disturbance, consisting, as Table LXIX indicates, in a sudden increase in deaths attributed to various causes with mention of alcoholism. Violent deaths with associated alcoholism were not so affected, but deaths attributed to heart diseases with mention of alcoholism increased from 51 in 1926 to 107 in 1929, and have since fluctuated between 60 and 80. The death-rate per million due to cirrhosis of the liver with mention of alcohol increased from 3 in 1926 to 8 in 1928, and has since fallen to 5 (Table 7), and the rate for cirrhosis without mention of alcohol has declined from 44 in 1926 to 25. Deaths attributed to causes other than violence, heart disease or cirrhosis of the liver, with mention of alcoholism, increased from 114 in 1933 to 148 in 1935 and 147 in 1936 but declined to 105 in 1937.

Table LXIX.—Deaths from or associated with Alcoholism; Death-rate per Million from the Combined Causes and from Cirrhosis of Liver not returned as Alcoholic, 1921-1937.

	Number of Deaths.										Death rate per million persons.	
	Alcoholism No. 75.		Returned as connected with alcoholism.									
			Cirrhosis of liver 124 (a)		Heart diseases 90–95.		Violent deaths 163–198.		Other causes.		Returned as alcoholism or associated therewith.	Cirrhosis of liver not returned as alcoholic 124 (b).
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
1921	127	55	100	54	41	17	61	11	125	56	17	47
1922	117	47	103	47	41	14	52	16	125	59	16	46
1923	104	47	98	54	22	12	46	16	106	57	15	42
1924	94	33	90	57	36	8	44	7	120	53	14	42
1925	95	55	87	49	25	19	34	6	90	48	13	44
1926	76	39	82	50	31	20	36	17	90	58	13	44
1927	84	24	162	101	40	22	37	14	176	92	19	41
1928	74	34	210	110	54	34	30	10	205	102	22	40
1929	85	49	175	83	69	38	41	11	206	75	21	38
1930	49	45	144	71	46	25	35	10	147	75	16	36
1931	40	41	162	99	45	35	24	2	136	45	16	34
1932	61	34	115	62	42	19	18	4	99	45	12	32
1933	43	30	115	77	52	19	24	10	79	35	12	26
1934	33	19	125	84	38	22	17	9	97	50	12	28
1935	50	23	139	62	46	30	17	8	91	57	13	28
1936	32	27	133	64	48	26	22	4	96	51	12	26
1937	54	48	135	72	51	29	29	12	62	43	13	25

Table LXX.—Deaths from or connected with Alcoholism, 1937.

	All Ages.		Under 25		25–		35–		45–		55–		65–		75–	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
75. Deaths attributed solely to alcoholism	54	48	2	—	3	1	10	6	19	16	13	15	5	8	2	2
Deaths attributed to other causes in conjunction with alcoholism—																
11. Influenza	12	1	—	—	—	—	2	—	4	1	4	—	2	—	—	—
23. Tuberculosis of the respiratory system	4	1	—	—	—	—	1	1	1	—	—	—	2	—	—	—
55 (*b*) Pharyngeal neoplasm ..	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
58. Gout	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
59. Diabetes	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
80. Tabes dorsalis (Locomotor ataxy)	2	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—
82. Cerebral hæmorrhage, apoplexy, etc.	2	11	—	—	—	1	—	—	1	2	—	6	1	1	—	1
84 (*b*) Korsakoff's syndrome ..	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
87 (*b*) Neuritis, neuralgia	3	2	—	—	—	1	—	—	1	1	1	—	—	—	1	—
87(*e*) Cerebral degeneration ..	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
92. Valvular disease of heart ..	5	1	—	—	1	—	—	—	—	—	3	1	1	—	—	—
93 (*a*) Toxic myocarditis	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
93:(*b* 1) Fatty heart	12	7	—	—	1	—	2	—	2	2	6	2	1	2	—	1
93:(*b* 2) Cardio vascular degeneration	7	1	—	—	—	—	—	—	1	—	2	—	3	1	1	—
93:(*b* 3) Other or unspecified myocardial disease	21	18	—	—	—	—	5	—	7	3	4	7	5	3	—	5
93 (*c*) Myocarditis not distinguished as acute or chronic ..	1	2	—	—	—	—	—	—	1	—	—	2	—	—	—	—
94 Diseases of coronary arteries	3	—	—	—	—	—	1	—	—	—	—	—	2	—	—	—
95 (*b*:1) Cardiac dilatation	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
97 Arteriosclerosis	3	1	—	—	—	—	—	—	1	—	1	—	1	1	—	—
106. Bronchitis	2	1	—	—	—	—	—	—	1	—	—	—	—	1	1	—
107. Broncho-pneumonia ..	6	4	—	—	1	—	1	1	3	2	—	—	1	1	—	—
108. Lobar pneumonia	6	4	—	—	—	—	2	2	—	1	4	1	—	—	—	—
111 (1) Hypostatic pneumonia ..	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
117 Ulcer of the stomach or duodenum	3	—	—	—	—	—	—	—	2	—	1	—	—	—	—	—
118 (1) Inflammation of stomach	5	1	—	—	1	—	2	1	—	—	1	—	1	—	—	—
120(*a*:1) Colitis	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—
121 Appendicitis..	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
122 (*b*) Intestinal obstruction ..	1	1	—	—	—	—	—	—	—	1	1	—	—	—	—	—
124 (*a*) Cirrhosis of liver ..	135	72	—	—	2	2	16	4	25	15	60	29	26	18	6	4
125 (1) Acute yellow atrophy of liver	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
127 (1) Cholangitis	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
128. Acute pancreatitis ..	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
130–132 Nephritis	7	7	—	—	—	—	2	—	1	1	—	2	4	—	—	4
133 (*a*) Pyelitis	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—
134 (*a*) Renal calculus	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
152 (1) Cellulitis	2	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—
163-171 Suicide	6	2	—	—	—	—	1	—	4	1	1	1	—	—	—	—
186 (pt.) Injury by fall	9	4	—	—	—	—	2	—	5	1	1	3	1	—	—	—
186 (pt.) Injury by crushing (vehicles, railway, etc.) ..	2	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—
Other violence	12	6	—	—	2	1	2	2	1	1	5	1	2	1	—	—
TOTAL ..	331	204	2	—	13	7	51	17	83	50	110	73	59	39	13	18

The number of deaths attributed solely to alcoholism without mention of other causes, 102, is the highest since 1929.

82b. Cerebral Embolism and Thrombosis.—Deaths assigned to cerebral embolism, thrombosis or softening numbered 3,270 of males and 4,351 of females. The death rates at various ages and standardized rates at all ages since 1921–30 are given in Table LXXI, which shows that at ages under 45 there has been a decline in mortality, at 45–55 there has been a slight increase and at later ages an increase amounting to about 40 per cent.

Table LXXI.—Cerebral Embolism, Thrombosis and Softening—Death rate per million living.

Ages	Males				Females			
	1921–30	1931–35	1936	1937	1921–30	1931–35	1936	1937
All ages (standardized)	77	92	104	107	80	91	108	106
0–	1	0	0	0	1	0	0	0
15–	2	0	1	1	2	0	1	—
25–	5	3	2	2	6	2	5	2
35–	14	12	9	9	17	13	14	11
45–	50	57	67	64	63	67	73	68
55–	208	247	287	318	215	226	282	287
65–	756	964	1,064	1,089	743	877	1,103	1,056
75 up	2,342	2,827	3,241	3,283	2,448	2,981	3,328	3,367

Cerebral embolism is frequently accorded a higher preference over associated causes of deaths by the certifier than results from the rules of selection, and the 378 deaths classed to this cause in 1937 would be increased to 419 by selection according to the certifier's order of statement. On the other hand the 7,243 deaths classed to cerebral thrombosis or softening would be diminished to 7,045.

90–103. **Diseases of the Circulatory System.**—The deaths assigned to *heart diseases* including coronary disease (Nos. 90–95) in 1937 numbered 128,713—62,925 of males and 65,788 of females. These numbers are equivalent to crude death-rates per million of 3,193 for males and 3,085 for females. When standardized, the revised rates are considerably reduced to 2,113 for males and 1,685 for females, these being slightly below the rates for 1936 which were the highest recorded (Table 8).

As pointed out in previous Reviews the recent increase of crude mortality (Table 7) from heart diseases is due, among other causes, to the increasing age of the population and to more frequent record of myocardial degeneration in certification of the deaths of old people. The introduction of the new form of death certificate led to more frequent statement of this or other forms of heart disease as a subsidiary cause, and by the operation of the rules of selection of joint causes this often results in the death being transferred to the heart group as a consequence.

The dual classification in 1937 showed that assignment of deaths according to the physician's selection of the essential cause rather than by the application of the selective rules (as set out in the Manual of the International List) would reduce the deaths of males classed to heart diseases as a whole from 62,925 to 49,041, or by 22·1 per cent. and those of females from 65,788 to 51,869 or by 21·2 per cent. The degree of overstatement of death rates at all ages from separate

groups of heart diseases which results from the operation of the selective rules is shown in Table LXXII by comparing the tabulated figures with those which would have resulted from selection in accordance with the order of statement of multiple causes as written on death certificates.

Table LXXII.—Diseases of Heart and Circulation: Effects of Classification in accordance with Physician's preference where multiple causes were certified, 1937.

International group to which death is classified.	Selection by rule (tabulated figures for 1937).		Selection by physician's preference as expressed on certificate		Excess (or defect) of first over second, per cent. of second figure	
	Males	Females	Males	Females	Males	Females
90. Pericarditis	248	162	229	142	8	14
91. Acute endocarditis	624	590	579	542	8	9
92. Chronic endocarditis, valvular disease	9,475	11,688	8,607	10,718	10	9
95. Diseases of heart not included in Nos. 90–94	3,013	3,741	2,718	3,438	11	9
93 (*b*) (1) Fatty heart	861	1,173	833	1,130	3	4
"Myocarditis" group (without arteriosclerosis:—						
93 (*a*) Acute myocarditis	168	147	88	94	91	56
93 (*b*) (3) Myocardial degeneration, chronic myocarditis	21,402	25,691	14,991	18,193	43	41
93 (*c*) Myocarditis not distinguished as acute or chronic	7,415	8,059	4,681	5,335	58	51
Angina pectoris group.						
94. Coronary disease, angina pectoris	10,333	5,127	7,357	3,324	40	54
Myocardial degeneration with mention of vascular sclerosis.						
93 (*b*) (2) Cardio-vascular degeneration ..	9,386	9,410	8,958	8,953	5	5
Other vascular sclerosis, hyperpiesis.						
97 (3) Arteriosclerosis without cerebral vascular lesion	4,976	4,420	6,353	4,940	−22	−11
97 (1) (2) Arteriosclerosis with cerebral vascular lesion	7,211	7,825	7,057	7,578		
82. Cerebral vascular lesions (without mention of arteriosclerosis)	11,864	15,437	10,929	14,088	6	7
102. High blood pressure* ..	440	388	2,838	3,161	−84	−88

* Analysis of a sample of 1,505 deaths classed to No. 102 Abnormalities of Blood Pressure during 1931–35 showed that 762 were attributed to "hyperpiesis," 324 to "hyperpiesia," 258 to "high blood pressure," 161 to "arterial hypertension," that is to say, the whole group consists of deaths attributed to high blood pressure or its synonyms.

Mortality assigned to heart diseases other than myocarditis or angina pectoris is, when judged on this basis, overstated by 3 to 14 per cent. Mortality assigned to myocarditis or myocardial degeneration (excluding fatty heart and cardiovascular degeneration) is, however, overstated through the operation of the selective rules by about 50 per cent. of the smaller figure, and mortality from coronary disease and angina pectoris is overstated to a similar degree. Deaths assigned to cardiovascular degeneration are overstated by about 5 per cent., and deaths from arteriosclerosis, evidenced by or mentioned in association with cerebral hæmorrhage by about 6 per cent. On the other hand deaths for which arteriosclerosis (without cerebral hæmorrhage) or high blood pressure were primary causes in the physician's opinion are greatly understated by the operation of the selective rules, a good deal of transfer from arteriosclerosis to

coronary disease and from high blood pressure to arteriosclerosis being occasioned by these rules. Hence the groups of cardiovascular and degenerative vascular diseases taken as a whole would not be appreciably affected by basing selection upon the physician's preference (the total deaths being reduced from 86,817 to 85,536, or by less than 2 per cent.) but the myocarditis group (without mention of vascular changes) would be greatly diminished. Table LXXIII shows the trend of the standardized death rate for each sex from (1) heart disease as a whole, (2) the "myocarditis" group of Table LXXII, (3) coronary disease or angina pectoris, and (4) the other cardiovascular and degenerative arterial diseases shown in Table LXXII. The component death rates making up the last group were shown for the years up to 1935 on page 113 of the Review for 1935.*

Table LXXIII.—Standardized death rates per million living from heart and degenerative vascular diseases, at triennial intervals from 1925 to 1934, and in each year since. Also mortality per cent. of that in 1925.

	Males				Females			
	All heart disease	Myocarditis group	Coronary disease, angina pectoris	Other cardiovascular and arteriosclerosis, etc.	All heart disease	Myocarditis group	Coronary disease, angina pectoris	Other cardiovascular and arteriosclerosis, etc.
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
1925 ..	1,322	398	55	1,054	1,220	351	19	827
1928 ..	1,474	579	100	1,064	1,349	509	34	837
1931 ..	1,845	757	168	1,067	1,592	676	59	843
1934 ..	1,897	807	248	1,058	1,565	715	94	848
1935 ..	1,949	841	279	1,060	1,597	737	107	871
1936 ..	2,118	959	314	1,108	1,700	824	118	908
1937 ..	2,113	962	338	1.112	1,685	827	128	910
Rates for subsequent years per cent. of those in 1925.								
1928 ..	111	145	182	101	111	145	179	101
1931 ..	140	190	305	101	130	193	311	102
1934 ..	143	203	451	100	128	204	495	103
1935 ..	147	211	507	101	131	210	563	105
1936 ..	160	241	571	105	139	235	621	110
1937 ..	160	242	615	106	138	236	674	110

The standardized death rate from heart disease as a whole has increased since 1925 by 60 per cent. for males and by 38 per cent. for females, but this increase is chiefly due to deaths assigned to myocarditis and angina pectoris. For the *myocarditis* group of Table LXXII the increase has exceeded 135 per cent. for each sex. The frequency with which myocarditis is mentioned in conjunction with other causes of death was ascertained from two samples of death certificates taken from the years 1926 and 1934 and relating to the more com-

* The rates for the second group for 1925 and 1928 are obtained by deducting the estimated rates for No 93*b* (2) in the table on page 113 of the Review for 1935 from the total of the two numbers 90(7) and 88(3) of the 1921 list.

prehensive group of diseases of the myocardium, including fatty heart and "cardiovascular degeneration" (see Review for 1936, p. 112).

Of the total deaths classed to myocardial disease 43·5 per cent. had mention of some associated cause in 1926, but by 1934 the proportion had increased to 57·8 per cent. The number of deaths attributed to myocardial disease without mention of any other cause increased between 1926 and 1934 by 94 per cent., whereas the number assigned to myocardial disease in association with some other cause increased by 244 per cent.

It is evident that in the presence of such rapid changes in the frequency of mention of myocarditis as a contributory cause the use of rigid selective rules can only lead to a distorted view of the statistics. On the other hand a system of rules ceases to be of value if it has to be varied to meet circumstances, and the present position with regard to myocarditis will only be met satisfactorily when classification is based upon the physician's selection, as will be the case from 1940 onwards. The mention of diseases of the myocardium as a subsidiary cause on 26,001 certificates in 1937 has probably in many instances no more significance than the mention of "heart failure," which is dealt with as a mode of dying rather than as a disease (being classed to No. 200 amongst ill-defined causes).

The cause most frequently associated with myocarditis on death certificates is bronchitis, over which heart diseases are preferred by the selective rules, and it is shown on p. 134 that 11,128 deaths classed to myocardial disease and 1,368 classed to other forms of heart disease in 1937 would be transferred to bronchitis by the certifier's preference. This combination with bronchitis is responsible for almost half of the present overstatement of heart disease mortality and for most of the corresponding understatement of bronchitis mortality shown below :—

Mode of Classification.	Heart diseases. (Nos. 90–95)		Bronchitis. (No. 106)	
	1936.	1937.	1936.	1937.
Selective rules (tabulated figures) ..	126,584	128,713	17,600	17,882
Physician's preference	98,973	100,910	32,724	33,865
Excess or defect by use of rules ..	+ 27,611	+ 27,803	− 15,124	− 15,983

The progressive rise since 1920, commented on in previous Reviews, in the standardized mortality assigned to *angina pectoris*, and to diseases of the coronary arteries, No. 94, continued in 1937. For males this rate has risen from 32 in 1920 to 338, and for females from 13 to 128, and since 1931 the increase amounts to 101 per cent. for males and 117 per cent. for females (Table LXXIII). As is the case for other heart diseases, when angina pectoris is mentioned in association with other chronic diseases, such as bronchitis or arteriosclerosis, the selective rules often give precedence to angina, although the certifying physician considers it to be only a terminal or contributory cause. Table LXXII shows that in 1937 the "overstatement" produced by the rules amounts to no less than 4,779 deaths, or 45 per cent. of the number which would have been classed

to No. 94 by selection in accordance with the physician's preference.

The standardized rate of mortality classed to other *cardio-vascular degeneration, arterio-sclerosis,* cerebral vascular lesions and abnormalities of blood pressure (comprising only hyperpiesis) is shown for various years since 1925 in Table LXXIII. Chronic interstitial nephritis mortality with mention of arterio-sclerosis has not been added since these deaths are not separated from other chronic nephritis in No. 131. The total rate for this group of diseases has increased only slightly since 1925, and, as stated on page 131, the group as a whole is little affected by the operation of the selective rules, though some of its small components are greatly affected.

104–114. **Diseases of the Respiratory System.**—Table LXXIV shows the trend of standardized death rates from bronchitis, asthma, the pneumonias and pulmonary congestion since 1911–20.

Table LXXIV.—Diseases of the Respiratory System. Standardized death rates per million living at all ages, 1911–1937.

Period.	Bronchitis (106)		Asthma (112)		Chronic Interstitial Pneumonia (114*a*).		Lobar, Broncho— and unspecified Pneumonia (107–109).		Congestion and hæmorrhagic infarct of Lung (111)	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1911–20 ..	1,129	940	56	35	11	3	1,354	957	41	35
1921–30 ..	750	594	48	31	8	2	1,111	776	25	25
1931–35 ..	422	314	35	26	10	2	886	623	23	21
1936 ..	370	241	31	23	10	1	826	545	21	18
1937 ..	365	246	35	25	11	2	859	563	20	17

Mortality from pneumonia declined by 35 per cent. for each sex between 1911–20 and 1931–35 and a further substantial improvement occurred in 1936, but the rates in 1937 were slightly above those of the preceding year. The death rates from chronic interstitial pneumonia, which includes silicosis not associated with tuberculosis, remain about the level of 20 years ago, but mortality from pulmonary congestion has fallen to half.

Bronchitis and asthma death rates have been considerably affected, as pointed out in the section on heart diseases,* by the increasing mention of myocardial degeneration in conjunction with bronchitis, which under the present system of selection according to the rules in the Manual of the International List results in the statistical classification of the death to the heart condition.

In 1937, out of a total of 17,882 deaths classed to bronchitis, 1,751 would have been assigned to other associated causes if selection had been carried out in accordance with the order of preference expressed by the certifier, 1,442 of these going to senility, 57 to congenital debility, 45 to infantile convulsions and 63 to pulmonary emphysema. The first two of these are indefinite causes, however,

* See also Review for 1936, p. 113.

and will be ignored in association with any definite disease even though preferred to it when the new system of selection comes into force, since the mention or omission of these terms in the case of aged persons on the one hand and young infants on the other has little or no significance in the presence of a definite disease.

There were, on the other hand, 17,734 deaths with mention of bronchitis which were classed to associated causes by the selective rules but which would be classed to bronchitis by selection in accordance with the certifier's preference, the principal causes from which these deaths would be transferred being as follows :—

	M.	F.	Persons
From 93. Diseases of myocardium	5,982	5,146	11,128
107–109. Pneumonias	1,411	1,059	2,470
92. Valvular disease, chronic endocarditis ..	335	396	731
90, 91, 94, 95. Other heart diseases	335	302	637
97. Arteriosclerosis	342	244	586
82. Cerebral hæmorrhage, embolism, etc. ..	118	149	267
57 : 2. Rheumatoid or osteo-arthritis	75	185	260
131. Chronic nephritis	109	79	188
Other causes	766	701	1,467
All causes	9,473	8,261	17,734

The percentage increase in mortality assigned to bronchitis, asthma, the pneumonias and pulmonary congestion which would have resulted in 1936 and 1937 from selection according to the certifier's opinion is shown below :—

		By present use of rules.	By certifier's order of statement.	Per cent. increase.
Bronchitis (106)	1936	17,600	32,724	+86
	1937	17,882	33,865	+89
Asthma (112)	1936	1,594	2,821	+77
	1937	1,810	3,129	+73
Pneumonia (108–110)	1936	28,182	28,408	+ 1
	1937	29,532	29,775	+ 1
Chronic interstitial pneumonia (114*a*)	1936	316	445	+41
	1937	369	493	+34
Pulmonary congestion, etc. (111)	1936	1,245	1,608	+29
	1937	1,255	1,616	+29

For pneumonia other than chronic interstitial the effect of the change of system when it is made will not be appreciable, but for the other groups of bronchial and pulmonary disease it will be very great. The selection of the cause for classification by rigid rules of preference which has been used hitherto may fail to provide a true picture of the trend of mortality in the presence of progressive changes in habits of certification. Classification by the alternative system, which was made possible by the revised form of death certificate introduced in 1927 and which will come into force shortly, will not be affected by the mention or omission of causes which the certifier regarded as only secondary or contributory. On the other hand the statistics so obtained will be affected by and will record changes in medical opinion as to which of two causes often occurring

together is the original cause, and progressive transfer of deaths from one cause to another may occur on this account, but the statistics of death must necessarily in the long run portray such changes in medical opinion and it is better that they should do so continuously rather than by arbitrary alterations in rules at intervals.

Although the recent fall in bronchitis and asthma mortality rates has been exaggerated in an artificial manner by the causes mentioned above, these can only account for a portion of the apparent decline, and a real fall must have occurred since 1911–20 at least as great as that which has occurred for pneumonia.

Acute primary pneumonia and influenzal pneumonia are notifiable diseases and the notifications in 1937 numbered 55,896 compared with 46,167 in 1936 and an annual average of 56,333 in 1931–35. The deaths classed to the acute pneumonia groups Nos. 107–109 exclude pneumonia secondary to the infective diseases such as measles and whooping cough, but include some deaths which the certifying physician considered to be due to some other primary cause such as bronchitis with pneumonia as a secondary or contributory cause, and on the other hand some deaths are classed to other causes where the certifier considered pneumonia to be the primary cause. As stated above, in a sample of 9,892 death certificates from all causes in 1934 there were 60 deaths classed to pneumonia which the certifier considered to be secondary to bronchitis, and there were 17 others thought to be secondary or contributory to other conditions, a total of 77 out of 724 deaths classed to Nos. 107–109. The figures given above for 1934, 1936 and 1937 show, however, that the additions to these pneumonia groups would exceed the deductions and that the acute primary pneumonia deaths may be taken as about 0·8 per cent. in excess of the deaths classed to Nos. 107–109 under the present system of rules. Applying this correction to the deaths prior to 1936 and adding the deaths from influenzal pneumonia (No. 11*a*: 1) the following ratios of deaths per 100 notifications are obtained.

Years.	No. of notifications of acute primary and influenzal pneumonia.	No. of deaths classed to :—		Estimated no. of deaths from acute primary pneumonia	Per cent. ratio of acute primary and influenzal pneumonia deaths to notifications.
		Influenza with pneumonia (11*a* : 1).	Lobar, broncho- or undefined pneumonia (107–109).		
1927–29	214,489	27,703	112,102	112,999*	65·5
1930–32	169,215	14,438	90,855	91,582*	62·7
1933–35	163,393	17,115	85,468	86,152*	63·2
1936 ..	46,167	2,885	28,182	28,408†	67·8
1937 ..	55,896	9,157	29,532	29,775†	69·7

* Corrected by increasing the classified deaths by 0·8 per cent.

† Deaths assigned to Nos. 107–109 by selection in accordance with order of statement of multiple causes on the death certificates.

The high ratio suggests that for pneumonia, as for some other notifiable diseases, notification must be incomplete, and the increase in the ratio in recent years from about 63 to 70 per cent. is difficult of explanation.

125–127. **Diseases of the Liver and Gall Bladder** (except cirrhosis and tumours).—In addition to the 1,233 deaths classed to cirrhosis of the liver in 1937, 113 were classed to acute yellow atrophy and 151 to other diseases of the liver. The annual deaths since 1921 from these causes have been as follows :—

		Acute yellow atrophy of liver.		Other diseases of liver (not cirrhosis or tumours).	
		Males	Females	Males	Females
Mean annual deaths	1921–25 ..	22	56	147	125
	1926–30 ..	19	62	106	91
	1931–33 ..	23	50	78	67
Annual deaths	1934 ..	24	58	75	61
	1935 ..	27	76	64	62
	1936 ..	32	87	73	71
	1937 ..	24	89	78	73

The annual deaths attributed to acute yellow atrophy changed little between 1921 and 1933, but have increased each year since, the deaths of females having risen from 48 in 1932 to 89 in 1937 The comparative figures for females at different ages since 1932, separating the deaths associated with pregnancy from the remainder, are shown below :—

	All ages	0–	15–	25–	35–	45–	65 up
Without record of associated pregnancy.							
1932 ..	21	2	3	3	1	8	4
1933 ..	20	3	4	5	3	5	—
1934 ..	26	3	1	9	5	6	2
1935 ..	37	6	6	10	2	11	2
1936 ..	34	5	—	6	3	17	3
1937 ..	31	5	5	6	6	9	—
With associated pregnancy.							
1932 ..	27	—	6	14	7	—	—
1933 ..	34	—	10	14	10	—	—
1934 ..	32	—	5	16	11	—	—
1935 ..	39	—	7	24	7	1	—
1936 ..	53	—	13	28	11	1	—
1937 ..	58	—	9	36	13	—	—

Most of the recent increase has occurred at ages 25–35 in association with childbearing. It was pointed out in the Reviews for 1933 (page 109) and 1934 (page 117) that on a considerable proportion of death certificates acute yellow atrophy is not merely mentioned in

association with, but is stated by the physician to be consequent upon, pregnancy or parturition. With the present arrangement of the International List of Causes, however, and until icterus gravis gravidarum is admitted to the list of toxæmias of pregnancy, "acute yellow atrophy due to pregnancy" must remain assigned to No. 125 (1) even in the alternative classification according to the physician's preference as carried out for 1937, for pregnancy cannot be regarded as a "disease" to take precedence over the liver affection. In Table LXXVII, therefore, the deaths classed to No. 125 (1) with associated childbearing are not reduced by the alternative method of classification.

The trend of mortality from liver affections of obscure origin also needs to be watched in view of the large number of new chemical and other substances which are being employed in therapeutics, some of which may have unsuspected toxic action upon the liver. The annual total deaths from liver and gall bladder diseases (Nos. 124–127) amongst children under 5 and at 5–15 years of age, and the standardized death rates at all ages from liver and gall bladder diseases excluding cirrhosis and gall stones, are given below for each triennium from 1921 to 1932 (average annual figures) and for each year since.

	Annual deaths from all liver and gall bladder diseases. Nos. 124–127.		S.D.R. per million, at all ages. Nos. 125 and 127.	
	Ages under 5	Ages 5–15	Males	Females
1921–23	53	35	18	21
1924–26	50	34	20	24
1927–29	29	28	17	24
1930–32	21	24	18	27
1933	16	20	17	28
1934	16	23	17	29
1935	26	17	18	31
1936	23	20	17	31
1937	24	21	17	28

130–133. **Diseases of the Kidney.**—Deaths classed to nephritis numbered 7,593 of males and 7,472 of females, the standardized death rates of 270 and 216 per million respectively being the lowest recorded in the nineteen years for which such rates have been calculated for separate years. The trend of the standardized death rates since 1901–10 is shown in Table LXXV, with separation of acute, chronic and unspecified nephritis for each year since 1931.

During the decade 1921–30 the male rate ranged from 286 per million in 1926 to 323 in 1929, and the female rate ranged from 226

in 1924 to 262 in 1929, but since 1931 both rates have fallen considerably, the decline being shared by each of the constituent groups.

Table LXXV.—Nephritis (Acute, Chronic or Unspecified)—Standardized death rates per million living in 1901–10, 1911–20, 1921–30 and in each year 1931 to 1937.

	Acute nephritis (No. 130).		Chronic nephritis (No. 131).		Nephritis not stated to be acute or chronic (No. 132).		Total nephritis.	
	M.	F.	M.	F.	M.	F.	M.	F.
1901–10							435	325
1911–20							406	302
1921–30							306	240
1931 ..	27	23	258	200	40	32	325	255
1932 ..	26	23	256	202	37	30	319	255
1933 ..	26	22	234	196	32	27	292	245
1934 ..	27	22	239	190	30	25	296	237
1935 ..	24	21	243	196	29	24	296	241
1936 ..	27	20	231	187	30	21	288	228
1937 ..	21	18	226	181	23	17	270	216

Classification of deaths with mention of more than one cause in accordance with the order of preference stated by the certifying physician reduces the deaths assigned to nephritis in 1937 from 15,065 to 14,916 or by one per cent.

The deaths from kidney diseases, excluding nephritis and tumours, numbered 582 of males and 674 of females in 1937, the crude death rate of 31 per million persons reaching the highest level yet recorded. This rate remained at 13 or 14 from 1911 to 1920,

		Average crude death rates per million		Mean annual death rates from Kidney diseases (other than nephritis and tumours) per million living at ages :—				
		Pyelitis	Other	0–	5–	25–	45–	65 and over
Males.	1921–25	12	6	11	3	10	32	104
	1926–30	13	7	16	3	11	31	101
	1931–35	16	6	30	4	12	38	107
	1936	19	8	54	5	13	36	137
	1937	21	8	54	2	14	41	151
Females.	1921–25	11	5	9	3	12	29	64
	1926–30	16	6	22	4	14	37	84
	1931–35	20	7	38	4	15	43	102
	1936	23	8	49	5	17	45	110
	1937	24	8	50	5	18	47	112

rose to 21 in 1927–29, to 26 in 1932 and has again increased since 1934. The trend of death rates since 1921 at various ages from pyelitis and other diseases included in this group is shown on previous page.

The most rapid increase has occurred amongst children under 5 whose mortality was five times as great in 1937 as in 1921–25. The rates for males at ages over 65 and for females at ages over 45 have also increased progressively and considerably.

140–150. **Maternal Mortality.**—*Deaths and their Classification.* The number of deaths assigned to diseases of pregnancy, childbirth and the puerperal state was 1,988 (Tables 6, 21 and LXXVI), of which 223 or 11·2 per cent. were assigned to abortion, 75 or 3·8 per cent. to ectopic gestation, and the remainder to other diseases and accidents arising from pregnancy and childbirth.

In addition 84 deaths from criminal abortion were assigned to various forms of violence, *e.g.*, suicide, murder, etc., in accordance with the verdicts recorded by the coroners' juries (Tables 25 and LXXVI), and 759 deaths of pregnant or parturient women who suffered from various non-puerperal diseases (Table LXXVII) were classified to those diseases. The assignment of deaths with mention of pregnancy or childbearing, to the maternal cause on the one hand or to the associated cause on the other, is carried out in accordance with rules of precedence outlined in the Manual of the International List of Causes of Death.

It should be remembered that the 759 deaths defined by this process as " not classed to pregnancy or childbearing but returned as associated therewith " resulted in large part from risks to which the general population of women was exposed and a large proportion of them would have occurred if these women had not been pregnant. Every pregnant woman is exposed to about the same hazards of dying from causes unconnected with pregnancy as if she had not been pregnant, and if she does so die the fact of pregnancy or recent parturition is usually mentioned on the death certificate on the grounds that notwithstanding that normal childbearing is a physiological process, it is difficult to assert categorically that in the presence of some serious disease it did not, by diminishing the reserves of strength or by some other means, render recovery more difficult. The introduction of the new form of certificate in 1927 undoubtedly resulted in a more complete recording of associated childbearing, since this might in many instances be regarded as " contributing to death but not related to the immediate cause," though neither " primary " nor " secondary " in the terminology of the old form of certificate.

A study of the trend of deaths before and after 1927 leads to the conclusion that about one-fifth of the deaths now classed as associated with childbearing would have escaped recognition as such in the death registers prior to the introduction of the new certificate; and this should be borne in mind when comparing recent rates with those prior to 1927.

Table LXXVI.—Deaths of Women classed to Pregnancy and Childbearing, 1937.

Cause of Death.	All Ages	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
140. Post abortive sepsis	173*	26*	143	4	8	24	41	51	37	12	—
Single	—	26*	—	—	6	8	8	2*	1	1	—
Married	—	—	143	—	2	16	33	47	35	10	—
Widowed	—	—	—	4	—	—	—	2	1	1	—
Streptococcal infection	5	1	4	—	—	—	—	1	4	—	—
Staphylococcal infection	7	—	6	1	—	1	—	3	3	—	—
Bacillus Welchii infection	2	—	2	—	—	—	1	1	—	—	—
Gas gangrene	1	—	1	—	—	—	—	1	—	—	—
Infective endocarditis	2	—	2	—	—	—	1	—	1	—	—
Septic phlebitis	1	—	1	—	—	—	—	—	—	1	—
Septicæmia	61	8	52	1	3	6	16	22	11	3	—
Sepsis	22	6	16	—	2	5	4	4	4	3	—
Septic intoxication, sapræmia.	3	—	3	—	—	—	1	1	1	—	—
Pelvic peritonitis	2	—	2	—	—	—	1	1	—	—	—
Peritonitis	34	5	28	1	1	9	6	9	6	3	—
Salpingitis	5	1*	4	—	—	—	—	3	2	—	—
Metritis	4	1	2	1	—	1	1	2	—	—	—
Endometritis	5	1	4	—	—	—	3	1	1	—	—
Parametritis	3	1	2	—	1	—	1	—	1	—	—
Pyæmia	9	1	8	—	1	—	4	1	1	2	—
Pelvic cellulitis	2	—	2	—	—	—	—	1	1	—	—
Pelvic abscess	3	1	2	—	—	1	1	—	1	—	—
Ovarian abscess	2	—	2	—	—	1	1	—	—	—	—
141. Abortion not returned as septic	50	2	46	2	—	3	10	17	14	5	1
Single	—	2	—	—	—	—	1	—	1	—	—
Married	—	—	46	—	—	3	9	16	12	5	1
Widowed	—	—	—	2	—	—	—	1	1	—	—
(1) Hæmorrhage following abortion.	44	2	40	2	—	2	8	16	12	5	1
Single	—	2	—	—	—	—	1	—	1	—	—
Married	—	—	40	—	—	2	7	15	10	5	1
Widowed	—	—	—	2	—	—	—	1	1	—	—
(2) Without record of hæmorrhage.	6	—	6	—	—	1	2	1	2	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	6	—	—	1	2	1	2	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
142. Ectopic gestation	75	7	64	4	—	4	15	24	23	8	1
Single	—	7	—	—	—	2	1	3	—	1	—
Married	—	—	64	—	—	2	14	20	21	6	1
Widowed	—	—	—	4	—	—	—	1	2	1	—
143. Other accidents of pregnancy	21	2	19	—	1	5	4	2	3	4	2
Single	—	2	—	—	1	1	—	—	—	—	—
Married	—	—	19	—	—	4	4	2	3	4	2
Widowed	—	—	—	—	—	—	—	—	—	—	—
Hydatidiform mole	10	1	9	—	1	2	—	2	1	2	2
Hydramnios	4	—	4	—	—	1	2	—	1	—	—
"Pregnancy" (unqualified)	7	1	6	—	—	2	2	—	1	2	—
144. Puerperal hæmorrhage	296	5	290	1	2	40	87	74	61	32	—
Single	—	5	—	—	1	—	1	3	—	—	—
Married	—	—	290	—	1	40	86	71	61	31	—
Widowed	—	—	—	1	—	—	—	—	—	1	—
(*a*) Placenta prævia	133	3*	129	1	—	15	26	38	34	20	—
Single	—	3*	—	—	—	—	1	2*	—	—	—
Married	—	—	129	—	—	15	25	36	34	19	—
Widowed	—	—	—	1	—	—	—	—	—	1	—
(*b*) Other puerperal hæmorrhage.	163	2	161	—	2	25	61	36	27	12	—
Single	—	2	—	—	1	—	—	1	—	—	—
Married	—	—	161	—	1	25	61	35	27	12	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
Post partum hæmorrhage	80	1	79	—	1	11	30	19	12	7	—
Adherent or retained placenta.	67	1	66	—	1	13	28	10	12	3	—
Accidental hæmorrhage	16	—	16	—	—	1	3	7	3	2	—

Table LXXVI.—*contd.*

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
145. Puerperal sepsis not returned as post-abortive.	423	14	409	—	6	76	123	122	72	23	1
Single	—	14	—	—	1	3	7	—	2	1	—
Married	—	—	409	—	5	73	116	122	70	22	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*a*) Puerperal septicæmia and pyæmia.	422	14	408	—	6	76	123	122	71	23	1
Single	—	14	—	—	1	3	7	—	2	1	—
Married	—	—	408	—	5	73	116	122	69	22	1
Widowed	—	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1	—	1	—	—	—	—	—	1	—	—
Streptococcal infection ..	26	—	26	—	—	6	7	6	6	1	—
Hamolytic streptococcal infection	8	—	8	—	—	—	7	1	—	—	—
Staphylococcal infection	5	—	5	—	—	1	3	—	—	1	—
Pneumococcal infection ..	5	—	5	—	—	—	3	2	—	—	—
Bacillus coli infection ..	3	—	3	—	—	1	1	—	1	—	—
Toxic myocarditis ..	1	—	1	—	—	1	—	—	—	—	—
Diphtheroid bacillus infection	1	—	1	—	—	—	1	—	—	—	—
Gas gangrene	1	—	1	—	—	—	—	1	—	—	—
Septic phlegmasia alba dolens, phlebitis, thrombosis	22	—	22	—	—	5	6	5	3	3	—
Septic pneumonia ..	2	—	2	—	—	—	—	2	—	—	—
Septic endocarditis ..	12	1	11	—	—	3	4	3	2	—	—
Septicæmia	127	4	123	—	2	25	33	35	23	8	1
Sepsis	54	3	51	—	1	9	13	22	7	2	—
Septic intoxication, sapræmia.	21	—	21	—	1	1	6	9	4	—	—
Pelvic peritonitis ..	3	—	3	—	—	—	1	1	—	1	—
Peritonitis	38	2	36	—	—	6	12	9	9	2	—
Salpingitis	7	1	6	—	—	2	—	3	2	—	—
Metritis	7	1	6	—	—	1	3	1	—	2	—
Endometritis	19	1	18	—	—	6	4	6	2	1	—
Parametritis	11	—	11	—	1	—	4	2	4	—	—
Pyæmia	9	—	9	—	—	1	1	6	1	—	—
Pelvic cellulitis	8	—	8	—	—	4	1	—	3	—	—
Erysipelas	1	—	1	—	—	—	1	—	—	—	—
Pelvic abscess	6	—	6	—	—	—	3	1	1	1	—
Toxic gangrene of peritoneum	1	1	—	—	1	—	—	—	—	—	—
"Puerperal fever" ..	23	—	23	—	—	4	9	7	2	1	—
(*b*) Puerperal tetanus ..	1	—	1	—	—	—	—	—	1	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	1	—	—	—	—	—	1	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
146. Puerperal albuminuria and convulsions.	333	18	314	1	20	73	88	73	63	15	1
Single	—	18	—	—	2	7	3	2	3	1	—
Married	—	—	314	—	18	66	85	70	60	14	1
Widowed	—	—	—	1	—	—	—	1	—	—	—
(1) Puerperal convulsions ..	236	16	219	1	7	47	59	62	45	15	1
Single	—	16	—	—	2	6	3	1	3	1	—
Married	—	—	219	—	5	41	56	60	42	14	1
Widowed	—	—	—	1	—	—	—	1	—	—	—
(2) Other conditions under 146	97	2	95	—	13	26	29	11	18	—	—
Single	—	2	—	—	—	1	—	1	—	—	—
Married	—	—	95	—	13	25	29	10	18	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
147. Other toxæmias of pregnancy..	167	9	157	1	3	27	48	49	25	14	1
Single	—	9	—	—	2	4	2	1	—	—	—
Married	—	—	157	—	1	23	46	48	24	14	1
Widowed	—	—	—	1	—	—	—	—	1	—	—
Chorea of pregnancy ..	1	—	1	—	—	—	1	—	—	—	—
Toxæmia of pregnancy ..	111	4	106	1	2	15	33	30	17	13	1
Puerperal toxæmia	3	1	2	—	—	1	1	1	—	—	—
Uncontrollable vomiting ..	52	4	48	—	1	11	13	18	8	1	—

Table LXXVI.—*contd.*

Cause of Death.	All Ages.	Civil Condition			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
148. Puerperal phlegmasia alba dolens, embolism and sudden death.	139	4	134	1	2	14	36	42	25	18	2
Single	—	4	—	—	—	1	1	1	—	1	—
Married	—	—	134	—	2	13	35	41	24	17	2
Widowed	—	—	—	1	—	—	—	—	1	—	—
(*a*) Puerperal phlegmasia alba dolens not returned as septic.	53	1	52	—	—	5	11	20	9	8	—
Single	—	1	—	—	—	1	—	—	—	—	—
Married	—	—	52	—	—	4	11	20	9	8	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(*b*) Puerperal embolism and sudden death.	86	3	82	1	2	9	25	22	16	10	2
Single	—	3	—	—	—	—	1	1	—	1	—
Married	—	—	82	—	2	9	24	21	15	9	2
Widowed	—	—	—	1	—	—	—	—	1	—	—
149. Other accidents of childbirth..	262	11	249	2	4	46	62	66	49	30	5
Single	—	11	—	—	1	5	2	1	2	—	—
Married	—	—	249	—	3	41	60	64	46	30	5
Widowed	—	—	—	2	—	—	—	1	1	—	—
Contracted pelvis	32	2	30	—	1	7	6	9	6	2	1
Instrumental delivery ..	20	—	19	1	1	7	3	5	1	3	—
Malpresentation	39	2	37	—	—	4	10	11	10	4	—
Abnormal fœtus	13	1	12	—	—	4	1	7	1	—	—
Disproportion..	12	—	12	—	—	3	1	4	3	1	—
Difficult and prolonged labour	32	—	32	—	—	5	10	5	5	6	1
Cæsarean section (reason not stated).†	10	1	9	—	—	2	4	2	—	2	—
Rupture of Cæsarean scar ..	7	1	6	—	—	2	1	2	2	—	—
Obstetrical shock	3	—	3	—	—	—	2	—	—	1	—
Ruptured uterus	18	—	17	1	—	—	2	5	6	3	2
Laceration of perineum ..	1	—	1	—	—	1	—	—	—	—	—
Inversion of uterus	13	—	13	—	—	2	6	3	1	1	—
Retroverted gravid uterus..	1	—	1	—	—	—	—	—	1	—	—
Uterine inertia	15	—	15	—	—	1	4	6	2	1	1
Atony of uterus	2	1	1	—	—	1	1	—	—	—	—
Version..	1	—	1	—	—	—	—	1	—	—	—
Rigid cervix uteri	4	—	4	—	—	—	—	1	1	2	—
Sub involution of uterus ..	2	—	2	—	—	1	—	—	1	—	—
Retained and adherent placenta	26	3	23	—	2	5	9	3	5	2	—
Precipitate birth	1	—	1	—	—	—	1	—	—	—	—
Multiple birth	10	—	10	—	—	1	1	2	4	2	—
150. Other or unspecified conditions of the puerperal state.	49	3	44	2	1	8	11	12	12	4	1
Single	—	3	—	—	1	—	—	1	1	—	—
Married	—	—	44	—	—	8	11	11	10	3	1
Widowed	—	—	—	2	—	—	—	—	1	1	—
(1) Puerperal insanity ..	18	—	18	—	—	5	6	4	3	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	18	—	—	5	6	4	3	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(2) Puerperal diseases of the breast.	7	—	7	—	—	—	2	3	2	—	—
Single	—	—	—	—	—	—	—	—	—	—	—
Married	—	—	7	—	—	—	2	3	2	—	—
Widowed	—	—	—	—	—	—	—	—	—	—	—
(3) Childbirth (unqualified) ..	24	3	19	2	1	3	3	5	7	4	1
Single	—	3	—	—	1	—	—	1	1	—	—
Married	—	—	19	—	—	3	3	4	5	3	1
Widowed	—	—	—	2	—	—	—	—	1	1	—
Anæmia	2	—	2	—	—	—	—	1	1	—	—
Encephalitis	1	—	1	—	—	—	—	1	—	—	—
Myocarditis	1	—	1	—	—	—	—	—	—	—	1
Endocarditis	2	1	1	—	—	—	1	—	1	—	—
Cardiac dilatation ..	2	—	2	—	—	—	—	1	—	1	—
Broncho pneumonia ..	8	1	6	1	1	1	1	1	2	2	—
Pneumonia	3	—	2	1	—	—	—	1	1	1	—

Table LXXVI.—*contd.*

Cause of Death.	All Ages.	Civil Condition			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
150—*contd.*											
Bronchitis	1	—	1	—	—	—	—	—	1	—	—
Cerebral hæmorrhage ..	1	—	1	—	—	—	—	—	1	—	—
Pulmonary œdema ..	1	—	1	—	—	1	—	—	—	—	—
Collapse of lung	1	—	1	—	—	1	—	—	—	—	—
Without stated secondary cause	1	1	—	—	—	—	—	1	—	—	—
Total (including abortion other than criminal).	1,988	101†	1,869	18	47	320	525	532†	384	165	15
Single	—	101†	—	—	15	31	26	14†	10	5	—
Married	—	—	1,869	—	32	289	499	512	366	156	15
Widowed	—	—	—	18	—	—	—	6	8	4	—
Total from causes other than abortion (Nos. 142–150).	1,765	73	1,680	12	39	293	474	464	333	148	14
Single	—	73	—	—	9	23	17	12	8	4	—
Married	—	—	1,680	—	30	270	457	449	319	141	14
Widowed	—	—	—	12	—	—	—	3	6	3	—
Criminal abortion (*see* Table 25)	84	23*	55	6	4	16	22	11	24	5	1
Single	—	23*	—	—	4	12*	5	2	—	—	—
Married	—	—	55	—	—	5	17	9	19	4	1
Widowed	—	—	—	6	—	—	—	—	5	1	—

* Including 1 divorced woman. † Including 2 divorced women.

‡ In addition, Cæsarean section was stated to have been performed in the cases of 96 deaths included under other headings in this table—placenta prævia 16, accidental hæmorrhage 2, puerperal albuminuria and convulsions 9, toxæmia of pregnancy 6, contracted pelvis 27, failed forceps 3, malpresentation 9, disproportion 8, difficult and prolonged labour 10, ruptured uterus 1, rigid os uteri 3, uterine inertia 2.

A detailed discussion of this and many other factors which must be taken into account when comparing statistics of maternal mortality with those of years prior to 1931, or with those of other countries, was included in the Review for 1933, pp. 96–113, to which reference should be made before drawing conclusions from such comparisons.

Table LXXVI gives in full detail of civil condition, age and cause, the deaths of women registered during 1937 which were classed to pregnancy and childbearing, that is to say to International groups 140–150, and to criminal abortion amongst the violent causes (Nos. 171, 175, 194, 195). The analysis contained in this table and its predecessors was summarized for each year 1924–33 in Table LXXI of the Review for 1933, and reference may be made to that table, to Table LXXVIII of the Review for 1934 and to Table LXXXIV of the Reviews for 1935 and 1936, in order to compare the deaths of married, single or widowed women from specific causes during 1937 with those registered in previous years.

The total deaths from causes other than abortion (Nos. 142–150) during each year 1931 to 1937, distributed by civil condition and

Table LXXVII.—Deaths of Women not Classed to Pregnancy or Childbearing, but returned as associated therewith, 1937.

		Classification by selective rules as in previous years								Classification by order of preference stated by certifying physician. All ages.
		All Ages	15–	20–	25–	30–	35–	40–	45 and upwards	
7.	Measles	1	—	—	—	1	—	—	—	*1*
8.	Scarlet fever	1	—	—	1	—	—	—	—	*1*
11.	Influenza	85	1	9	23	21	21	9	1	*82*
23.	Tuberculosis of respiratory system	47	5	11	15	9	5	2	—	*47*
24–32	Other forms of tuberculosis	10	—	2	4	2	1	1	—	*9*
34 (*a*)	Congenital syphilis	1	—	—	—	1	—	—	—	*1*
34 (*b*) (*c*)	Syphilis acquired or unspecified	3	—	—	1	1	—	1	—	*3*
38.	Malaria	1	—	—	1	—	—	—	—	*1*
43 (1)	Actinomycosis of appendix	1	—	—	1	—	—	—	—	*1*
45–53.	Cancer	13	—	3	1	4	3	2	—	*13*
54 (*a*)	Tumours of female genital organs	17	—	1	2	6	5	3	—	*19*
55 (*b*)	Tumours of other sites	2	—	—	2	—	—	—	—	*2*
56.	Rheumatic fever	6	1	2	—	2	1	—	—	*6*
59.	Diabetes	8	—	—	—	3	2	3	—	*8*
63 (1)	Rickets	2	—	—	—	1	1	—	—	*2*
66 (*b*)	Exophthalmic goitre	9	—	—	3	3	1	2	—	*7*
66 (*d*)	Parathyroid tetany	1	—	—	—	1	—	—	—	*1*
67.	Enlarged thymus	1	—	—	—	—	1	—	—	*1*
69 (1)	Fatty degeneration of kidneys	1	—	—	—	—	—	1	—	*1*
69 (2)	Other diseases included under 69	3	—	1	—	1	—	1	—	*3*
70 (*b*)	Hæmophilia	1	—	—	—	1	—	—	—	*1*
71 (*a*)	Pernicious anæmia	15	—	—	5	3	4	3	—	*15*
71 (*b*) (2)	Anæmia	5	—	2	1	—	2	—	—	*6*
72 (*b*) (2)	Agranulocytosis	—	—	—	—	—	—	—	—	*1*
78 (*a*)	Cerebral abscess	2	—	—	2	—	—	—	—	*2*
81 (3)	Myelitis	1	—	—	—	1	—	—	—	*1*
82 (*a*) (1)	Cerebral hæmorrhage	2	—	—	—	1	—	—	1	*3*
82 (*b*) (1)	Cerebral embolism	1	—	—	—	—	—	1	—	*1*
82 (*b*) (2)	Cerebral thrombosis	1	—	—	—	1	—	—	—	*2*
84 (*b*)	Melancholia	1	—	—	—	1	—	—	—	*1*
85.	Epilepsy	4	—	—	2	1	—	1	—	*4*
89 (*a*)	Otitis media	1	—	—	—	—	1	—	—	*1*
89 (*b*)	Mastoiditis	1	—	—	1	—	—	—	—	*1*
90	Purulent pericarditis	1	—	—	—	—	—	1	—	*2*
91 (1)	Sub-acute bacterial endocarditis	1	—	—	—	—	1	—	—	*1*
91 (2)	Other acute endocarditis	1	1	—	—	—	—	—	—	—
92 (1)	Aortic valve disease	2	—	1	—	—	1	—	—	*2*
92 (2)	Mitral valve disease	78	1	10	20	22	19	6	—	*75*
92 (3, 4, 5)	Other or unspecified valvular disease	34	2	6	8	8	6	4	—	*32*
93 (*a*)	Acute myocarditis	1	—	1	—	—	—	—	—	*1*
93 (*b* : 1)	Fatty heart	7	—	1	3	—	1	2	—	*7*
93 (*b*) (2)	Cardiovascular degeneration	1	—	—	—	—	1	—	—	*1*
93 (*b* : 3), 93 (*c*).	Other or unspecified myocardial disease	40	—	2	8	9	11	7	3	*30*
94.	Diseases of coronary arteries	4	—	—	—	1	2	1	—	*4*
95.	Other diseases of the heart	10	—	—	2	2	3	2	1	*11*
96.	Aneuryem	2	—	—	—	2	—	—	—	*2*
99.	Pulmonary thrombosis	1	—	1	—	—	—	—	—	*1*
100 (1)	Varix	4	—	1	1	1	—	1	—	*4*
100 (2)	Venous thrombosis	1	—	—	—	1	—	—	—	*1*
104 (2)	Diseases of the accessory nasal sinuses	1	—	1	—	—	—	—	—	*2*
105 (2)	Laryngitis	1	—	—	—	1	—	—	—	*2*
106.	Bronchitis	6	—	—	4	—	1	1	—	*21*
107.	Broncho pneumonia	26	—	1	7	10	7	1	—	*32*
108.	Lobar pneumonia	66	4	5	13	18	17	8	1	*64*
109.	Pneumonia (not otherwise defined)	5	—	—	1	2	1	1	—	*10*
110 (1)	Empyema	—	—	—	—	—	—	—	—	*1*
110 (2)	Pleurisy	1	—	—	—	—	—	1	—	*1*
112.	Asthma	11	—	—	3	5	1	2	—	*14*
114 (*a*)	Pulmonary fibrosis	—	—	—	—	—	—	—	—	*1*
114 (*b*) (2)	Abscess of lung	—	—	—	—	—	—	—	—	*1*
115 (1)	Dental caries	1	—	1	—	—	—	—	—	*2*
115 (3)	Diseases of the tonsils	4	—	—	2	1	1	—	—	*6*
117 (*a*)	Ulcer of the stomach	2	—	—	—	—	1	1	—	*2*
119 & 120(*a*)	Acute enteritis	1	—	1	—	—	—	—	—	*1*
119 & 120(*b*)	Ulcerative colitis	1	—	—	1	—	—	—	—	*3*
121.	Appendicitis	9	1	1	5	—	2	—	—	*10*
122 (*a*) (1)	Strangulated ventral hernia	1	—	—	—	—	—	1	—	*1*
122 (*b*)	Intestinal obstruction	55	1	8	10	14	16	6	—	*17*

Table LXXVII.—*contd.*

		Classification by selective rules as in previous years								Classification by order of preference stated by certifying physician. All ages.
		All Ages	15–	20–	25–	30–	35–	40–	45 and upwards	
125 (1)	Acute yellow atrophy ..	58	1	8	18	18	9	4	—	*59*
125 (2)	Other diseases of the liver ..	2	—	—	1	1	—	—	—	*2*
126 (2)	Gall stones	1	—	1	—	—	—	—	—	*1*
129	Purulent peritonitis	1	—	—	—	1	—	—	—	*1*
131.	Chronic nephritis	52	—	2	12	13	13	10	2	*53*
132.	Nephritis unspecified	2	—	—	—	—	—	2	—	*2*
133 (*a*)	Pyelitis	4	—	2	1	1	—	—	—	*4*
133 (*b*)	Other diseases included under 133	2	—	—	1	—	1	—	—	*2*
139 (*b*)	Fibrosis uteri	1	—	—	—	—	—	1	—	*1*
139 (*c*)	Abscess of breast..	1	—	—	—	—	—	—	1	*1*
152 (2)	Abscess of thigh	1	—	—	—	1	—	—	—	*1*
156 (*a*)	Septic arthritis	1	—	—	1	—	—	—	—	*1*
156 (*b*)	Prepatellar bursitis	—	—	—	—	—	—	—	—	*1*
157 (*c*)	Congenital malformation of heart	4	—	1	—	1	2	—	—	*4*
163–198.	Violence	2	—	—	1	1	—	—	—	*2*
	Total	759*	18	86	188	199	165	93	10	*748*
	Single ..	39	6	10	10	7	5	1	—	—
	Married ..	712	12	76	178	192	156	90	8	—
	Widowed ..	8	—	—	—	—	4	2	2	—
Associated with abortion (included above) ..		104	1	12	24	25	26	15	1	—
	Single ..	6	—	3	1	1	1	—	—	—
	Married ..	97	1	9	23	24	24	15	1	—
	Widowed ..	1	—	—	—	—	1	—	—	—
Totals in accordance with preference stated by certifying physician		—	*18*	*83*	*191*	*201*	*158*	*88*	*9*	*748*
	Single ..	—	*6*	*10*	*11*	*7*	*5*	*1*	—	*40*
	Married ..	—	*12*	*73*	*180*	*194*	*149*	*85*	*7*	*700*
	Widowed ..	—	—	—	—	—	*4*	*2*	*2*	*8*

* Of these 759 deaths, 240 were stated to be associated with pregnancy, 104 with abortion, 41 with premature delivery, 11 with delivery at full term, and 363 with childbirth. Cæsarean section was stated to have been performed in the case of 76 of these deaths, of which 23 were attributed to ileus following Cæsarean section and assigned to No. 122 (*b*) above.

age, have been as follows, the numbers of live and still births registered in each year being also shown.

	1931	1932	1933	1934	1935	1936	1937
Total deaths, excluding abortions (Nos. 142–150)	2,254	2,208	2,240	2,354	2,104	1,991	1,765
Single or divorced women.. ..	117	108	123	127	106	109	73
Married women ..	2,121	2,084	2,101	2,211	1,986	1,866	1,680
Widowed women	16	16	16	16	12	16	12
All women, Ages 10– ..	—	—	1	—	—	—	—
15– ..	68	62	61	59	63	46	39
20– ..	383	321	366	372	327	314	293
25– ..	581	576	617	638	554	538	474
30– ..	578	553	501	585	541	515	464
35– ..	414	435	455	441	404	388	333
40– ..	207	234	215	235	185	171	148
45 up ..	23	27	24	24	30	19	14
Live and still births ..	659,014	640,443	605,497	622,851	624,191	630,337	635,363

Table LXXVII gives in similar detail of age, and by civil condition for the total, the causes to which the deaths classed as *associated with, though not due to, pregnancy or childbearing* were assigned, those associated with abortion being also distinguished at the foot of the table. The total consisted of 39 single, 712 married and 8 widowed women, compared with average numbers during 1931–36 of 35, 721 and 6 respectively. The annual totals of these deaths in the 7 years 1931 to 1937 have been 911, 713, 828, 747, 712, 668 and 759. A large part of the fluctuation in these totals has been due to influenza epidemics, the deaths associated with that disease in the 7 years being 94, 55, 129, 31, 33, 21, 85 and the deaths associated with all other causes 817, 658, 699, 716, 679, 647, 674. Chronic nephritis accounted for 52 (63 in 1936), acute yellow atrophy for 58 (53 in 1936) and lobar pneumonia for 66 (72 in 1936). Deaths assigned to intestinal obstruction numbered 55 (39 in 1936), including 23 from ileus following Cæsarean section.

The effect of the operation of the rules of preference upon the distribution of deaths between Tables LXXVI and LXXVII was discussed in the Review for 1933, and the conclusion was reached that complete reliance upon the order of statement on the certificate of death rather than upon the rules of selection defined in the Manual of the International List of Causes of Death would not affect the *totals* assigned to maternal and non-maternal causes to any appreciable extent, although it might result in considerable transfers between the sub-groups making up the totals.

In 1937, as in 1936, a dual classification was carried out for all deaths, and the alternative assignment of the 2,747 deaths with mention of pregnancy or childbearing according to the physician's order of preference is shown below and in the final column of Table LXXVII. Comparison between the cause distributions resulting from the two systems of selection proves that, although many individual deaths are classified differently by the two methods, the transfers between cause groups tend to balance one another to a remarkable extent so that the total distributions resulting do not differ to any important degree.

List No.		By selective rules (as tabulated)	By physician's order of preference
140	Post-abortive sepsis	173	171
141	Abortion not returned as septic	50	51
142	Ectopic gestation	75	79
143	Other accidents of pregnancy	21	22
144	Puerperal hæmorrhage	296	304
145	Puerperal sepsis not returned as post abortive	423	369
146	Puerperal albuminuia and convulsions..	333	327
147	Other toxæmias of pregnancy	167	179
148	Puerperal phlegmasia alba dolens ..	139	139

List No.		By selective rules (as tabulated)	By physician's order of preference
149	Other accidents of childbirth	262	309
150	Other or unspecified conditions of the puerperal state	49	49
140–150	*Total deaths classed to Pregnancy and Child-bearing*	1,988	1,999
11	Influenza	85	82
23	Tuberculosis of respiratory system ..	47	47
92	Valvular disease of heart	114	109
93	Diseases of myocardium	49	39
106, 112	Bronchitis, asthma	17	35
108	Lobar pneumonia	66	64
107, 109	Other pneumonia	31	42
122*b*	Intestinal obstruction	55	17
125 (1)	Acute yellow atrophy of liver	58	59
131	Chronic nephritis	52	53
—	All other causes (*see* Table LXXVII) ..	185	201
	Total deaths classed to causes other than 140–150 *with associated pregnancy and childbearing*	759	748

Puerperal sepsis deaths would be reduced by 13 per cent. according to the physician's preference; the totals for abortion and other accidents of pregnancy would not be changed; puerperal hæmorrhage would be increased by 3 per cent. and the toxæmias by 1 per cent.; other accidents of childbirth would be increased by 18 per cent.; and the total classed to Nos. 140–150 would not be appreciably affected. Deaths classed to bronchitis would be increased and myocardial diseases decreased for reasons discussed in the section dealing with heart disease. Lobar pneumonia has a high preference by rule over the non-septic conditions connected with child-bearing and has been believed to be overstated at the expense of the maternal causes, but this is shown not to be the case, the total being scarcely affected when puerperal sepsis deaths have also been taken into account. Chronic nephritis also would not be appreciably changed by substituting the physician's preference. Paralytic ileus following Cæsarean section is partly responsible for the overstatement of deaths classed to intestinal obstruction by the rules, a matter which has been frequently referred to. The position with regard to acute yellow atrophy is discussed on page 137.

No national statistics are available of the frequency with which *Cæsarean section* is resorted to, but the deaths with mention of the operation, whether assigned to puerperal or non-puerperal causes, were increasing until 1931 (Table LXXVIII). In 1921–23 and succeeding triennia to 1933–35 they averaged 103, 117, 142, 164 and 175 per annum, in 1936 they numbered 187 and in 1937 182.

All deaths classified as caused by or associated with *abortion* are brought together in Table LXXIX under the various headings,

with corresponding figures for previous years for which the information is available. These deaths averaged 536 annually in 1930–32 and 546 in 1933–35, but declined to 453 in 1936 and 411 in 1937.

Table LXXVIII.—Deaths with Mention of Cæsarean Section, 1921–1937.

	Assigned to Puerperal Causes.						Assigned to non-puerperal causes.			Total with mention of Cæsarean Section.
	Placenta prævia.	Contracted pelvis.	Albuminuria, etc.	Other specified.	Reason not stated.	Total.	Intestinal obstruction.	Other Causes.	Total.	
1921 ..	4	19	3	13	50	89	5	18	23	112
1922 ..	5	9	9	25	20	68	7	13	20	88
1923 ..	1	8	8	35	33	85	5	18	23	108
1924 ..	7	39	6	32	4	88	11	13	24	112
1925 ..	9	31	8	32	10	90	11	18	29	119
1926 ..	6	40	16	30	5	97	10	12	22	119
1927 ..	5	24	10	56	2	97	8	23	31	128
1928 ..	9	40	16	46	2	113	11	24	35	148
1929 ..	15	55	9	17	8	104	11	35	46	150
1930 ..	11	43	8	25	5	92	23	27	50	142
1931 ..	14	54	16	41	10	135	16	32	48	183
1932 ..	13	46	10	38	9	116	22	30	52	168
1933 ..	10	51	9	39	16	125	21	24	45	170
1934 ..	6	33	16	42	9	106	23	32	55	161
1935 ..	18	40	9	59	16	142	17	36	53	195
1936 ..	17	34	2	68	17	138	21	28	49	187
1937 ..	16	27	9	44	10	106	23	53	76	182

It should be noted that abortions resulting from other complications of pregnancy or induced therapeutically on that account are still classed to Nos. 143, 146, 147 and do not appear under any of the "abortion" headings unless there was some more important associated condition causing the death to be classed as "associated with abortion" in Table LXXVII.

Special enquiries were continued during 1937 regarding the deaths classified as due to pregnancy or child-bearing as to whether the deceased had been delivered of a live or still-born child, or whether there had been an abortion, or death had occurred whilst in the pregnant state (which would include some incomplete abortions), and the results of these enquiries are shown in Table LXXX. There were 48 deaths classed to albuminuria, eclampsia, other toxæmias and "other accidents" of pregnancy in which an abortion was ascertained to have occurred. How many of these occurred spontaneously and how many by therapeutic induction was not ascertained. Such abortions which are secondary to toxæmia or to some other morbid condition of pregnancy, and of which mention is not always made on death certificates, are in a class by themselves, and they are not in the present system of classification included in the total of abortion deaths. The enquiries also made it possible to exclude from the abortion group No. 141 (1) deaths attributed to "antepartum hæmorrhage" or "accidental hæmorrhage of pregnancy" if accompanied by a live or still birth, which owing to the

Table LXXIX.—Deaths attributed to, or associated with, Abortion, 1926-37.

Old List No.	New List No.		1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Part of 146	140	Post-abortive sepsis ..	222	215	224	238	300	229	262	257	295	262	241	173
	141	Abortion not returned as septic :—												
Part of 143c		(1) Hæmorrhage following abortion.	72	72	47	51	59	97	105	108	94	71	56	44
143a		(2) Without record of hæmorrhage.	86	82	77	67	65	21	12	13	5	20	13	6
199, 202	VI (Table 25).	Criminal abortion (inquest cases).	51	47	57	67	67	79	69	85	100	94	73	84
		Total attributed to abortion.	431	416	405	423	491	426	448	463	494	447	383	307
		Associated with abortion but not classed to it.	?	?	83	182*	77	77	90	97	64	74	70	104
		Total attributed to, and associated with, abortion.	?	?	488	605	568	503	538	560	558	521	453	411

* The excessive number of deaths associated with abortion but not classed to it in 1929 was partly due to the influenza epidemic of that year and partly to the allocation to abortion rather than to childbirth for that year only of 63 deaths said to be associated with premature delivery without definition as to length of gestation.

unsatisfactory classification of the hæmorrhages of pregnancy in the last revision of the International List, a somewhat confused terminology, and a frequent failure to distinguish between abortion and stillbirth, might have been assigned to this number in years prior to 1936. Conversely it was possible to correctly classify to No. 141 (1) a few deaths which would otherwise have been assigned to No. 144, puerperal hæmorrhage. There still remain in the Table a few anomalous assignments to No. 141 which must continue until the International List has been revised, but the abortion and hæmorrhage deaths as tabulated may now be regarded as substantially free from such errors.

Deaths known to have resulted from criminal abortion numbered 84, which did not differ from the yearly average of the preceding 5 years. Post-abortive sepsis caused 173 deaths, compared with 241 in 1936 and a yearly average of 250 in 1926–35. These post-abortive sepsis deaths comprised 29 per cent. of the total assigned to sepsis following delivery.

Many medical certificates contain no statement as to whether the sepsis followed abortion or delivery at term, and it was ascertained by a sample inquiry in 1932 that about 4 per cent. of such deaths were post-abortive sepsis, and on the basis of this the sepsis figures for the six years 1929–34 can be corrected as explained in previous Reports with the effects upon mortality rates as noted below Table LXXXII. In 1935–37, as the result of the enquiries mentioned above, the correct allocation of sepsis deaths was made possible.

Puerperal sepsis not post-abortive was the assigned cause of 423 deaths, compared with 917, 744, 602 in 1934, 1935 and 1936 respectively, indicating a rapid decline in recent years.

Table LXXX.—Deaths from Pregnancy and Childbearing Classified by Cause, Age, Civil Condition and Outcome of Pregnancy, 1937.

Cause to which Initial Classification was made.§	Deaths following or accompanied by				Deaths in the Pregnant State.	No information obtained.	Total
	Live Birth(s).	Still Birth(s).	Live and Still Birth.	Abortion.			
140–150. All Causes Total	735	464	14	247	247	281	1,988
Single	27	16	—	25	15	16	99
Married	707	443	14	217	227	261	1,869
Widowed	1	4	—	4	5	4	18
Divorced	—	1	—	1	—	—	2
Ages 15–	17	3	—	8	6	13	47
20–	133	67	1	36	24	59	320
25–	226	106	8	56	57	72	525
30–	187	133	4	74	75	59	532
35–	113	95	1	52	61	62	384
40–	55	55	—	20	22	13	165
45 up.	4	5	—	1	2	3	15
140 Post-abortive sepsis	—	—	—	150	—	23	173
141 Abortion not returned as septic—							
(1) With record of hæmorrhage	—	—	—	31	7	6	44
(2) Without „ „	—	—	—	5	—	1	6
142 Ectopic gestation	—	—	—	—	62	13	75
143 Other accidents of pregnancy	3	1	—	1	11	5	21
144 Puerperal hæmorrhage—							
(*a*) Placenta prævia	26	53	1	5	28	20	133
(*b*) Other puerperal hæmorrhage	100	39	1	1	3	19	163
145 Puerperal sepsis not returned as post-abortive.	280	86	2	—	—	55	423
146 Puerperal albuminuria and convulsions.	89	105	3	20	78	38	333
147 Other toxæmias of pregnancy	20	49	1	27	43	27	167
148*a* Puerperal phlegmasia alba dolens not returned as septic.	29	3	—	5	—	16	53
148*b* Puerperal embolism and sudden death.	57	15	1	—	4	9	86
149 Other accidents of childbirth	104	102	5	—	11	40	262
150 (1) Puerperal insanity	11	2	—	2	—	3	18
150 (2) Puerperal diseases of the breast	5	—	—	—	—	2	7
150 (3) Childbirth (unqualified)	11	9	—	—	—	4	24

§ The classification by cause was modified in the light of the information obtained in the course of the special enquiries in the case of deaths certified as puerperal sepsis and found to be post-abortive, or deaths certified as antepartum hæmorrhage or accidental hæmorrhage of pregnancy following which a live or still birth was said to have occurred, or deaths otherwise assignable to No. 144 (*b*) but found to have followed an abortion.

Rates of Mortality.—Maternal mortality rates should properly be based upon the number of pregnancies, but this number cannot be ascertained owing to the absence of statistics of abortions and of multiple births. It is, therefore, necessary to choose between some approximation to this number, such as the registered annual births, and the total living population of women of the specified class whether pregnant or not. In the Reviews for the years 1921–30, crude death rates per million women of all ages were shown in Table 5 for each puerperal cause, but from 1931 rates based upon the total births registered in each year have been substituted (Table 7). Rates of mortality from combined puerperal causes per 1,000 live births have been given in the text of the Reports since 1902, and in Table LXXXI such rates are given from 1891–95 to 1906–10 according to the classification in use prior to 1911, and from 1911 onwards according to both the old and revised systems.

The changes in the classification of causes in 1911 involved certain transfers of puerperal mastitis, phlegmasia alba dolens

and nephritis deaths, which necessitate tabulation of the dual series of rates for comparison with earlier years.

Reliable statistics of stillbirths have been available since 1928, and as the total births, *i.e.*, live and still births, provide a closer approximation to the number of women exposed to the risk of dying from puerperal conditions than do live births alone, maternal mortality rates have been calculated since that year on both bases, and will continue to be so calculated for a sufficient period to enable statistical continuity to be assured.

For a discussion of the relative advantages of, and fallacies inherent in, the different rates used as measures of mortality risk in childbearing, reference should be made to the Review for 1933, pp. 113–116.

Table LXXXI shows that the annual rate of total mortality from pregnancy and childbearing with exclusion of criminal abortion, ranged from 3·87 to 4·37 per 1,000 live-born children during 1911–20, and from 3·81 to 4·42 in the next decade. The years 1928–30 and 1933–34 were characterized by higher rates for sepsis than had been recorded for many years, save in 1920, and the total rate in consequence was enhanced in those years, but in 1935 it fell to 4·10, in 1936 to 3·80, and in 1937 to 3·26, the lowest rate recorded.

Mortality classed to causes associated with pregnancy or childbearing ranged from 0·91 to 1·09 during 1911–17, was very high owing to influenza in the years 1918–19, and was again enhanced from the same cause in 1922, 1927, 1929 and 1933. During the four years 1923–26 before introduction of the new death certificate, the rate averaged 1·06, and in 1931–35 it averaged 1·29, but as was pointed out in the Review for 1933 an increase of about one-fifth in this rate has probably resulted from the fuller information invited by the new certificate. In 1936 the rate was 1·10 and in 1937 it was 1·24.

Abortion deaths can only be distinguished from 1926 onwards and Table LXXXII shows the mortality rates per thousand live births in each year 1926 to 1937 from pregnancy and childbearing with exclusion of abortion, distinguishing the sepsis mortality, and also from other causes associated with pregnancy and childbearing excluding those with mention of abortion. In the next part of the Table similar rates per thousand live and still births are shown for each year 1928 onwards and rates from puerperal sepsis including abortion are added. During the ten years 1926–35 the mortality from pregnancy and childbearing without abortion fluctuated between 3·93 per 1,000 live births (1934) and 3·51 (1935), but in 1936 the rate fell to 3·29 and in 1937 to 2·89. The sepsis component of this rate has fallen from 1·53 in 1934 to 0·69 in 1937. A decline in mortality from other streptococcal diseases since 1934, attributable in part to epidemiological variation and in part to new therapeutical agents by which these infections can be combated, has been noted

Table LXXXI.—Mortality of Women in or associated with Childbirth per Thousand Children born alive, 1891–1937.

Year.	Classification in use from 1911 onwards.				Classification in use before 1911.				Total Mortality from or associated with pregnancy or childbirth. §
	Puerperal (including post. abortive) sepsis.	Other puerperal causes including abortion§	Total mortality from pregnancy and child-bearing.§	Associated causes*	Puerperal (including post-abortive) sepsis.	Other puerperal causes including abortion§	Total mortality from pregnancy and child-bearing.§	Associated causes†	
1891–95	—	—	—	—	2·60	2·89	5·49	—	—
1896–1900	—	—	—	—	2·12	2·57	4·69	—	—
1901–05	—	—	—	—	1·95	2·32	4·27	1·29	5·56
1906–10	—	—	—	—	1·56	2·18	3·74	1·26	5·00
1911–15	1·42	2·61	4·03	0·99	1·50	2·31	3·81	1·21	5·02
1916–20	1·51	2·61	4·12	1·68	1·59	2·29	3·88	1·92	5·80
1921–25	1·40	2·50	3·90	1·14	1·48	2·21	3·69	1·35	5·04
1926–30	1·73	2·54	4·27	1·24	1·78	2·23	4·01	1·50	5·51
1931–35	1·76	2·54	4·30	1·29	1·83	2·29	4·12	1·48	5·60
1911 ..	1·43	2·44	3·87	1·04	1·52	2·15	3·67	1·24	4·91
1912 ..	1·39	2·59	3·98	0·97	1·47	2·31	3·78	1·17	4·95
1913 ..	1·26	2·70	3·96	0·91	1·34	2·37	3·71	1·16	4·87
1914 ..	1·55	2·62	4·17	0·95	1·63	2·32	3·95	1·17	5·12
1915 ..	1·47	2·71	4·18	1·09	1·56	2·38	3·94	1·38	5·27
1916 ..	1·38	2·74	4·12	0·94	1·47	2·40	3·87	1·19	5·06
1917 ..	1·31	2·58	3·89	0·95	1·39	2·27	3·66	1·18	4·84
1918 ..	1·28	2·51	3·79	3·81	1·35	2·20	3·55	4·05	7·60
1919 ..	1·67	2·70	4·37	1·93	1·76	2·36	4·12	2·18	6·30
1920 ..	1·81	2·52	4·33	1·13	1·87	2·25	4·12	1·34	5·46
1921 ..	1·38	2·54	3·92	1·08	1·46	2·25	3·71	1·29	5·00
1922 ..	1·39	2·42	3·81	1·35	1·46	2·12	3·58	1·58	5·16
1923 ..	1·30	2·52	3·82	1·00	1·38	2·22	3·60	1·22	4·82
1924 ..	1·39	2·51	3·90	1·16	1·48	2·22	3·70	1·36	5·06
1925 ..	1·56	2·52	4·08	1·07	1·62	2·24	3·86	1·29	5·15
1926 ..	1·60	2·52	4·12	1·02	1·64	2·23	3·87	1·27	5·14
1927 ..	1·57	2·54	4·11	1·32	1·63	2·20	3·83	1·60	5·43
1928 ..	1·79	2·63	4·42	1·20	1·85	2·30	4·15	1·47	5·62
1929 ..	1·80	2·53	4·33	1·49	1·83	2·24	4·07	1·75	5·82
1930 ..	1·92	2·48	4·40	1·19	1·96	2·19	4·16	1·43	5·59
1931 ..	1·66	2·45	4·11	1·44	1·71	2·22	3·93	1·62	5·55
1932 ..	1·61	2·60	4·21	1·16	1·68	2·33	4·01	1·36	5·37
1933 ..	1·83	2·68	4·51	1·43	1·90	2·42	4·32	1·62	5·94
1934 ..	2·03	2·57	4·60	1·25	2·10	2·30	4·39	1·45	5·85
1935 ..	1·68	2·42	4·10	1·19	1·75	2·20	3·95	1·34	5·29
1936 ..	1·39	2·41	3·80	1·10	1·47	2·18	3·65	1·25	4·90
1937 ..	0·98	2·28	3·26	1·24	1·03	2·07	3·10	1·40	4·50

* 759 deaths in 1937 (Table LXXVII).
† 759 deaths in Table LXXVII, 97 from puerperal nephritis and albuminuria and 1 from tetanus in 1937.
§ Excluding criminal abortion.

elsewhere in this Review, the death rate of males from septicæmia having declined from 25 to 13 per 1,000 living, and the erysipelas death rate of males from 41 to 16 per 1,000 in this period.

In the last two columns of Table LXXXII are given the total abortion rates (including criminal) and the rates from non-maternal causes associated with abortion, these rates being based upon the population of women between the ages of 15 and 45. No consistent change in the abortion rate was evident between 1928 and 1935, but in 1936 the rate fell to 39 per million and in 1937 to 31.

The trend of mortality rates from the separate causes can be ascertained from Table 7.

Mortality rates from each cause at three ages of the mother, based upon the estimated numbers of live and still-births at those

Table LXXXII.—Mortality rates of Women in or associated with pregnancy and childbearing, with separation of abortion, 1926-37.

Year.	Per 1,000 Live Births.				Per 1,000 Live and Still Births.					Per Million women aged 15–45.	
	Pregnancy and childbearing without abortion.			Associated causes without abortion.	Pregnancy and childbearing without abortion.			Associated causes without abortion.	Sepsis, including abortion. ‡	Abortion, including criminal.	Associated with abortion.
	Septic.	Other.	Total.		Septic.	Other.	Total.				
1926	1·28	2·29	3·57	?	—	—	—	—	—	—	—
1927	1·24	2·30	3·54	?	—	—	—	—	—	—	—
1928	1·46	2·44	3·90	1·07	1·40	2·34	3·74	1·03	1·72	42	9
1929	1·43	2·35	3·78	1·21	1·38	2·25	3·63	1·25	1·73	43*	12†
1930	1·45	2·29	3·74	1·07	1·40	2·19	3·59	1·03	1·84	50*	8
1931	1·30	2·27	3·57	1·32	1·25	2·17	3·42	1·27	1·59	43*	8
1932	1·19	2·41	3·60	1·01	1·14	2·31	3·45	0·97	1·55	46*	9
1933	1·39	2·47	3·86	1·26	1·33	2·37	3·70	1·21	1·75	47*	10
1934	1·53	2·40	3·93	1·14	1·47	2·31	3·78	1·10	1·95	51*	7
1935	1·24	2·27	3·51	1·07	1·19	2·18	3·37	1·02	1·61	46	8
1936	0·99	2·30	3·29	0·98	0·96	2·20	3·16	0·94	1·34	39	7
1937	0·69	2·20	2·89	1·07	0·67	2·11	2·78	1·03	0·94	31	10

* If corrected for puerperal sepsis deaths having no statement as to duration of pregnancy (*see* text) the estimated rates for 1929 to 1934 are raised to 46, 53, 46, 47, 50 and 53, and the septic and total rates excluding abortion are decreased by about 0·04 per 1,000. No correction is necessary for 1935 or 1936.
† Corrected in accordance with the note below Table LXXIX.
‡ Excluding criminal abortion.

ages calculated from Census data, were given in Table LXXV of the Review for 1933 relating to each year 1924–33, and Table LXXXV of the Review for 1934 gave similar rates at the three ages for causes other than abortion in married women based upon estimated legitimate births, and for abortion in married and single women based upon the respective estimated populations in 1930–32, 1933 and 1934.

Pending the ascertainment of age of mother at birth registration the estimated numbers of births at various ages at dates several years after the census were not thought to be sufficiently reliable to justify the calculation of similar rates for subsequent years.

Number of previous confinements and multiple births.—Special enquiries were again made during 1937 regarding the number of previous pregnancies for every death classed to maternal causes and as to whether the birth was multiple or single, live or still, for every death of a married woman classed to maternal causes other than abortion. Complete replies on these matters were received relating to 1,514 of the deaths and partial replies relating to 94, and the information so obtained is analysed in Table LXXXIII. Comparison of the birth order distribution with those for 1935 and 1936 is given below :—

	1st	2nd	3rd	4th	5th or later
1935. Per cent. distribution according to order of "confinement."	43·2	18·3	10·8	7·1	20·6
1936. Per cent. distribution according to order of "pregnancy."	41·8	19·6	11·4	7·9	19·3
1937. Ditto	42·7	19·5	12·0	7·9	18·0

Table LXXXIII.—Deaths of Married Women Classed to Pregnancy and Childbearing, according to previous Fertility and Outcome of the Pregnancy resulting in Death, 1937.

No. of previous pregnancies.	Total of known birth order.	With live or still birth.					Total with live or still birth.	With abortion	Deaths in the pregnant state.
		Single birth.		Multiple birth.					
		Live.	Still.	Live only.	Live and still.	Still only.			
0	646	330	188	9	5	1	533	39	74
1	295	120	80	2	3	1	206	40	49
2	181	77	41	—	1	1	120	34	27
3	119	44	36	1	—	1	82	24	13
4	68	22	20	—	1	—	43	14	11
5	59	18	17	—	1	—	36	14	9
6	37	10	10	—	—	—	20	7	10
7	30	8	9	—	1	—	18	6	6
8	30	13	6	2	—	—	21	4	5
9	10	1	4	—	—	—	5	3	2
10	15	8	4	—	—	—	12	2	1
11	8	3	4	—	—	—	7	—	1
12	7	1	3	—	—	—	4	—	3
13	1	1	—	—	—	—	1	—	—
14	7	2	3	1	—	—	6	—	1
15	1	1	—	—	—	—	1	—	—
Totals of known birth order	1,514	659	425	15	12	4	1,115	187	212
Birth order not known	—	31	12	2	2	2	49	30	15

About 42 per cent. of maternal deaths of married women occur in connection with first pregnancies, about 20 per cent. in 2nd pregnancies, 20 per cent. in 3rd and 4th pregnancies combined and 18 per cent. in all pregnancies of later order.

Table LXXXIII also shows that whereas 53·3 per cent. of the maternal deaths occurring in first pregnancies were accompanied by one or more live births, the proportion declined to 42·6 per cent. in 2nd or 3rd pregnancies and 35·5 per cent. in 4th or later pregnancies. Out of 1,115 maternal deaths following a live or still birth, 31 accompanied a multiple birth, a proportion of 1 in 36. The proportion of multiple to total confinements being of the order 1 in 90, it is evident that the fact of a pregnancy being multiple enhanced the average mortality risk considerably.

Regional distribution.—Deaths from abortion other than criminal, and from the residual groups of septic and other causes excluding

abortion, were distributed amongst the different types of area as follows :—

	England & Wales.	Greater London.	County Boroughs.*	Other urban districts.*	Rural districts.*
140. Post-abortive sepsis	173	38	75	41	19
141. Abortion, not septic	50	6	21	17	6
145. Puerperal sepsis not returned as abortion	423	58	133	148	84
142–4, 146–50. Other causes	1,342	199	410	458	275

(* Outside Greater London.)

Comparison of these totals with the corresponding figures on page 134 of the Review for 1936 shows that abortion deaths declined in Greater London by 3, in the county boroughs by 25, in the other urban districts by 45, and in the rural districts by 14. Puerperal sepsis deaths registered a decline of 11 in Greater London, 57 in the county boroughs, 52 in other urban districts and 59 in the rural districts. Other causes showed an increase of 44 in Greater London but a fall of 64 in the county boroughs and of 31 in the rural districts.

The 96 abortion deaths in the county boroughs (including those within the boundary of Greater London) were thus located :— Barnsley 2, Barrow-in-Furness 1, Birkenhead 1, Birmingham 7, Bolton 1, Bournemouth 1, Bradford 1, Bristol 3, Bury 1, Carlisle 1, Coventry 2, Darlington 1, Derby 2, Dewsbury 1, Doncaster 1, Grimsby 1, Halifax 1, Hastings 1, Kingston-upon-Hull 2, Leeds 5, Leicester 1, Liverpool 6, Manchester 7, Middlesbrough 4, Newcastle-upon-Tyne 6, Nottingham 4, Plymouth 2, Rochdale 1, St. Helens 4, Salford 1, Sheffield 10, Southampton 1, Southend-on-Sea 1, Stockport 1, Stoke-on-Trent 4, Sunderland 2, Walsall 2, Cardiff 1, Newport 1, Swansea 1.

The distribution throughout the country of the mortality ascribed to pregnancy and childbearing, including abortion, in 1937, is outlined in Table LXXXIV. The sepsis rate was lowest in the South-East and Greater London, and highest in Wales I and II, and the rate for other causes was lowest in Greater London and highest in Wales.

Puerperal fever notification.—The records of cases of puerperal fever or pyrexia notified are collated with those of births and of deaths from this cause in Table LXXXIV. The proportion to live births of puerperal fever or pyrexia cases notified was 145 per 10,000 compared with 128, 123, 136, 141, 136 and 137 in the six years from 1931 to 1936. The records of notifications under both headings will be found in Tables 28–29 in full detail of locality, but the two headings should be considered only in combination, since from October of 1937 conditions formerly notified as puerperal fever were

no longer distinguished from pyrexia outside London and have been included from that date under the pyrexia heading. The highest rates were recorded for North III and Greater London.

Table LXXXIV.—Distribution throughout England and Wales of Mortality of Women in Childbirth, distinguishing Septic and Other Causes, and of Prevalence of Puerperal Fever and Pyrexia, 1937.

	Per 1,000 Live Births.				Per 1,000 Live and Still Births.				Puerperal Fever or Pyrexia Cases per 100 Deaths.
	Deaths.			Cases.	Deaths.			Cases.	
	Sepsis.	Other causes.	Total.	Puerperal Fever or Pyrexia	Sepsis.	Other causes.	Total.	Puerperal Fever or Pyrexia	
England and Wales ..	0·98	2·28	3·26	14·49	0·94	2·19	3·13	13·93	1,485
South-East	0·73	1·73	2·46	14·67	0·71	1·67	2·38	14·19	2,009
Greater London ..	0·78	1·67	2·46	17·15	0·76	1·62	2·38	16·60	2,188
Remainder of South-East..	0·65	1·82	2·47	10·95	0·63	1·75	2·38	10·58	1,685
North	1·14	2·66	3·80	15·26	1·09	2·54	3·64	14·60	1,335
North I	1·02	2·72	3·74	12·05	0·98	2·60	3·58	11·55	1,179
„ II	1·07	2·33	3·40	13·14	1·03	2·24	3·27	12·62	1,226
„ III	1·10	2·27	3·37	18·23	1·06	2·17	3·22	17·42	1,651
„ IV	1·23	2·93	4·16	15·38	1·18	2·80	3·98	14·70	1,250
Midland	1·07	2·18	3·25	13·77	1·02	2·10	3·12	13·22	1,292
Midland I	0·99	2·38	3·37	13·41	0·95	2·28	3·24	12·87	1,352
„ II	1·22	1·79	3·00	14·50	1·17	1·72	2·89	13·93	1,191
East	0·81	1·99	2·80	12·31	0·78	1·92	2·70	11·87	1,518
South West	0·80	2·76	3·55	15·67	0·77	2·65	3·42	15·08	1,964
Wales	1·40	3·39	4·79	12·27	1·33	3·21	4·54	11·64	877
Wales I	1·43	3·33	4·75	13·09	1·35	3·15	4·51	12·41	918
„ II	1·32	3·56	4·88	9·97	1·26	3·38	4·64	9·47	754
County Boroughs* ..	1·05	2·18	3·23	18·65	1·01	2·09	3·09	17·90	1,776
Other Urban Districts*	1·03	2·60	3·63	11·44	0·99	2·49	3·48	10·96	1,106
Rural Districts*.. ..	0·96	2·62	3·58	8·98	0·22	2·52	3·44	8·62	934
Greater London Admin. County	0·84	1·45	2·29	19·21	0·81	1·41	2·22	18·58	2,298
Greater London Outer Ring ..	0·74	1·85	2·59	15·46	0·72	1·80	2·51	14·98	2,086

* Excluding Greater London.

The proportion of puerperal fever or pyrexia cases to sepsis deaths ranges in the regions from 754 cases notified per 100 deaths in Wales II to 2,188 in Greater London, and in the density aggregates from 934 in the rural districts to 1,776 in the county boroughs.

163–171. **Suicide.**—There were 5,165 deaths by suicide, 3,447 of males and 1,718 of females. The male standardized death rate, which reached its highest level, 165 per million living, in 1932, has declined each year since to 131 in 1937. The female standardized rate, which reached a maximal level of 65 per million in 1933, was 60 in 1937.

Table LXXXV compares the mean annual death rates by suicide for each sex and age in the decades from 1861–70 to 1911–20, quinquennial periods from 1921–25 to 1931–35 and in 1936 and 1937.

The distribution of suicide in separate areas of the country was given in detail for the period 1931–35 in Table XCVII of the Review for 1935, and an analysis of suicides by poisoning according to the

Table LXXXV.—Mean Annual Death rates by Suicide, per million living at different ages: 1861 to 1937.

	0–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over	All ages (Standardized)
Males											
1861–70	—	4	28	59	93	163	263	377	359	251	105
1871–80	—	4	24	64	104	179	276	408	416	335	115
1881–90	—	4	29	67	117	202	310	437	478	373	128
1891–1900	—	5	34	84	142	241	348	456	479	386	144
1901–10	—	4	36	91	152	252	397	523	508	382	157
1911–20	—	3	32	69	122	196	278	389	380	350	119
1921–25	—	2	28	71	100	200	326	457	493	408	129
1926–30	—	2	35	84	122	222	366	513	530	464	146
1931–35	—	2	39	96	141	209	379	542	534	483	152
1936	—	2	29	91	120	192	300	491	478	436	133
1937	—	4	32	81	132	173	298	467	497	455	131
Females.											
1861–70	—	3	31	31	35	53	84	87	83	70	35
1871–80	—	3	26	33	39	54	81	95	92	64	36
1881–90	—	3	34	40	43	64	84	92	86	53	39
1891–1900	—	4	37	41	52	76	96	100	88	52	44
1901–10	—	3	34	45	56	80	109	109	88	49	47
1911–20	—	2	30	41	50	74	100	102	81	52	43
1921–25	—	1	23	40	48	78	120	125	92	60	46
1926–30	—	0	27	45	66	96	148	158	123	66	57
1931–35	—	—	23	49	77	108	153	165	135	84	62
1936	—	—	19	39	61	99	164	161	134	68	57
1937	—	1	13	46	73	100	155	162	152	83	60

substance employed was given for the period 1933–35 in Table XCIV of that Review.

175. **Deaths caused by Air Transport.**—There were 175 deaths from air accidents (171 of males and 4 of females), compared with 74, 43, 49, 67, 61 and 99 in the years 1931 to 1936. The record of deaths by age since 1931 is shown in Table LXXXVI. Out of a total of 538 deaths of males in 1931–37, 224 were at ages 20–25 and 201 at 25–35.

Table LXXXVI.—Accidental deaths—Air Transport, by sex and age. 1931—1937.

	Males							Females
	1931	1932	1933	1934	1935	1936	1937	1931–37
Under 15 ..	—	1	2	—	—	—	1	—
15–	5	1	1	5	3	4	14	2
20–	32	18	18	15	24	32	85	5
25–	25	18	23	33	21	35	46	13
35–	6	2	3	6	7	16	18	8
45–	1	—	—	1	—	4	4	1
55–	1	—	—	—	1	1	1	—
65–and over ..	—	—	—	2	—	—	2	1
All ages ..	70	40	47	62	56	92	171	30

Deaths caused by Motor and other Vehicles (not on railways).—Apart from 398 deaths on railways and 175 caused by aircraft, there were 5,547 accidental (or "open verdict") deaths attributed to mechanically-propelled vehicles in 1937, 4,082 of males and 1,465 of females. The rate of mortality per million persons was 135, the corresponding rates in the 6 years 1931 to 1936 being 147, 141, 147, 151, 131 and 133. In Table LXXXVII, the allocation of deaths to the different types of mechanically-propelled road vehicles is shown. The group "motor omnibus" includes, in each year, deaths due to trolley buses. The deaths classified as "Others" in 1937 are made up as follows:—

Motor cab, 14; motor coach, 19; motor tractor, 15; other or undefined motor, 6, and collisions involving a motor vehicle without statement as to which of the vehicles caused the death, 1,786.

Table LXXXVII.—Deaths, and Death Rates per Million Living, caused by various Types of Road Motor Vehicles in each year—1929–37.

	Deaths.									Rate per Million Living.								
	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936	1937.	1929.	1930.	1931.	1932.	1933.	1934	1935.	1936.	193
Electric tram ..	89	73	74	52	66	69	51	65	64	2·2	1·8	1·9	1·3	1·6	1·7	1·3	1·6	1
Motor car ..	1,660	1,643	1,688	1,646	1,773	1,882	1,633	1,617	1,648	41·9	41·3	42·2	40·9	43·9	46·5	40·2	39·6	40
Motor van, lorry, etc. ..	1,162	1,273	1,209	1,111	1,180	1,290	1,170	1,059	998	29·3	32·0	30·2	27·6	29·2	31·9	28·8	25·9	24
Motor omnibus	584	692	529	447	421	413	369	384	359	14·7	17·4	13·2	11·1	10·4	10·2	9·1	9·4	8
Motor cycle ..	1,162	1,286	1,083	983	965	875	733	650	638	29·3	32·3	27·1	24·5	23·9	21·6	18·0	15·9	15
Others.. ..	1,095	1,375	1,309	1,432	1,529	1,583	1,355	1,664	1,840	27·6	34·5	32·7	35·6	37·9	39·1	33·3	40·7	44
Total motor vehicles ..	5,752	6,342	5,892	5,671	5,934	6,112	5,311	5,439	5,547	145·2	159·3	147·3	141·1	147·1	151·0	130·7	133·2	135

Deaths attributed to the motor or trolley omnibus showed little change in 1937, the total registered deaths in the causation of which this type of vehicle was concerned (alone or in collision with some other vehicle) being 852, 699, 595, 559, 537, 474, 528 and 533 in the eight years 1930 to 1937. For the motor cycle the corresponding totals have been 2,091, 1,797, 1,783, 1,727, 1,621, 1,380, 1,338 and 1,331, showing a continuous fall since 1930, but for the motor car this total, after remaining almost stationary from 1930 to 1932 (2,219, 2,257, 2,291) rose to 2,527 in 1933 and 2,700 in 1934, fell to 2,315 in 1935 and increased again to 2,500 in 1936 and 2,647 in 1937.

Pedal cycles are known to have been concerned in or responsible for the following accidental deaths:—

		1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Pedal cycles alone	M	207	258	235	308	345	399	447	384	379
	F	47	61	84	95	105	152	159	118	107
Pedal cycle in collision with other vehicles	M	232	294	309	431	544	627	511	694	807
	F	23	34	35	49	64	99	77	116	141
Total	M	439	552	544	739	889	1,026	958	1,078	1,186
	F	70	95	119	144	169	251	236	234	248
	P	509	647	663	883	1,058	1,277	1,194	1,312	1,434

The rapid increase of such deaths, which was arrested in 1935, continued in 1936 and 1937.

Table LXXXVIII compares the mean annual death rates per million living due to accidents caused by all forms of road motor vehicles at various ages in 1937 with those in the three preceding years and the three triennial periods 1925–27, 1928–30 and 1931–33. The male rate at all ages is three times the female rate. This excess is present at each age, but the ratio of male to female risk increases with age to a maximum about 7 at 25–35 and then declines to about 2 at ages over 65.

Table LXXXVIII.—Death rates per Million living from All Accidents caused by Road Motor Vehicles, by Sex and Age. 1925–27, 1928–30, 1931–33, 1934, 1935, 1936 and 1937.

	Males.							Females.						
	1925–27.	1928–30.	1931–33.	1934.	1935.	1936.	1937.	1925–27.	1928–30.	1931–33.	1934.	1935.	1936.	1937.
0– ..	107	142	143	135	124	145	111	55	87	88	95	73	80	70
5– ..	195	250	242	229	193	188	185	92	129	133	126	105	105	92
10– ..	102	132	106	107	103	104	91	26	40	37	38	35	31	36
15– ..	151	231	238	251	192	210	188	32	50	52	70	49	65	64
20– ..	233	365	393	414	363	381	404	30	57	55	58	46	58	68
25– ..	146	221	228	234	199	193	202	22	31	33	32	33	34	29
35– ..	112	147	142	155	137	142	147	23	33	33	31	23	27	31
45– ..	134	166	160	192	158	160	159	36	57	53	49	46	45	51
55– ..	170	239	228	228	215	217	224	75	95	104	100	75	83	88
65– ..	301	400	395	405	348	322	364	140	190	186	185	192	180	176
75 and over	490	738	711	753	658	608	628	179	276	260	355	277	264	296
All ages	159	226	225	224	203	205	207	48	71	72	75	64	67	69

From 1925–27 to 1928–30 the male rate at all ages rose by 42 per cent. and the female rate by 48 per cent. The changes which took place in the mean rates from 1928–30 to 1931–33 were, however, remarkably slight, the female rates remaining almost unchanged at each age under 45, whilst the male rates showed a rise for young adults balanced by a fall for boys of school age and men over 35.

The mortality rates of children under 5 fell considerably in 1937, and for children aged 5–10 the progressive improvement of recent years continued. At 10–15 the rate for boys declined but that for girls increased. The male rate at 15–20 also declined but male mortality between 20 and 45 and at ages over 55 increased. Female rates increased at 20–25, between 35 and 65 and at ages over 75. The groups showing no improvement since 1928–30 are males aged 20–45, and females aged 20–35 and over 75. As indicated in the Review for 1933, there are three ages of maximal risk, 5–10, 20–25 and 75 upwards, depending upon the fact that the death rates are the resultants of the combined risks to pedestrians, cyclists and occupants of motor vehicles.

Table LXXXIX.—Deaths of Pedestrians, Pedal Cyclists, Motor Cyclists and Occupants of Other Vehicles in Road Accidents, according to sex, class of area of residence and type of vehicle involved, 1937.

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
England and Wales.														
Motor cycle	122	93	—	—	382	39	—	—	—	—	504	132	26	6
,, ,, and pedal cycle	—	—	38	4	20	1	—	—	—	—	58	5	3	—
,, ,, ,, motor car	—	—	—	—	291	38	3	—	1	—	295	38	15	2
,, ,, ,, motor van, lorry	—	—	—	—	202	10	—	—	—	—	202	10	10	—
,, ,, ,, motor bus	—	—	—	—	49	3	—	—	—	—	49	3	2	—
Motor car*	768	454	410	65	3	—	249	120	—	—	1,430	639	73	30
Motor van or lorry*	541	298	265	46	3	—	128	5	—	—	937	349	48	16
Motor or trolley bus	175	119	4	—	—	—	40	21	—	—	219	140	11	7
Motor charabanc or coach	9	9	—	—	—	—	1	—	—	—	10	9	—	—
Other motor vehicles	16	3	—	—	—	—	9	—	—	2	25	5	—	—
Collisions of motor vehicles	—	1	82	24	24	—	148	55	—	—	254	80	13	4
Horse vehicles	43	11	1	—	—	—	39	2	—	—	83	13	4	1
Pedal cycles, other or undefined vehicles	111	71	257	35	—	—	—	—	—	—	368	106	19	5
Total	1,785	1,059	1,057	174	974	91	617	203	1	2	4,434	1,529	225	72
Greater London residents.														
Motor cycle	21	24	—	—	45	6	—	—	—	—	66	30		
,, ,, and pedal cycle	—	—	7	2	2	—	—	—	—	—	9	2		
,, ,, ,, motor car	—	—	—	—	51	12	—	—	—	—	51	12	43	10
,, ,, ,, motor van, lorry	—	—	—	—	37	1	—	—	—	—	37	1		
,, ,, ,, motor bus	—	—	—	—	10	1	—	—	—	—	10	1		
Motor car*	144	128	77	13	1	—	47	17	—	—	269	158	66	34
Motor van or lorry*	121	86	63	9	2	—	26	2	—	—	212	97	52	21
Motor or trolley bus	35	22	1	—	—	—	3	3	—	—	39	25	10	5
Motor charabanc or coach	7	7	—	—	—	—	—	—	—	—	7	7		
Other motor vehicles	4	1	—	—	—	—	1	—	—	—	5	1	21	7
Collisions of motor vehicles	—	1	19	5	8	—	46	16	—	—	73	22		
Horse vehicles	7	1	—	—	—	—	8	—	—	—	15	1	4	—
Pedal cycles, other or undefined vehicles	17	20	19	3	—	—	—	—	—	—	36	23	9	5
Total	356	290	186	32	156	20	131	38	—	—	829	380	204	83
County Borough residents§.														
Motor cycle	30	24	—	—	80	12	—	—	—	—	110	36		
,, ,, and pedal cycle	—	—	7	—	7	—	—	—	—	—	14	—		
,, ,, ,, motor car	—	—	—	—	76	11	1	—	—	—	77	11	44	8
,, ,, ,, motor van, lorry	—	—	—	—	45	6	—	—	—	—	45	6		
,, ,, ,, motor bus	—	—	—	—	10	—	—	—	—	—	10	—		
Motor car*	224	145	81	6	—	—	57	36	—	—	362	187	59	28
Motor van or lorry*	171	101	71	14	—	—	34	—	—	—	276	115	45	17
Motor or trolley bus	78	54	2	—	—	—	16	5	—	—	96	59	16	9
Motor charabanc or coach	—	—	—	—	—	—	1	—	—	—	1	—		
Other motor vehicles	6	1	—	—	—	—	2	—	—	1	8	2	10	3
Collisions of motor vehicles	—	—	23	9	4	—	25	12	—	—	52	21		
Horse vehicles	12	3	1	—	—	—	8	1	—	—	21	4	3	1
Pedal cycles, other or undefined vehicles	35	22	60	11	—	—	—	—	—	—	95	33	16	5
Total	556	350	245	40	222	29	144	54	—	1	1,167	474	192	71
Urban District residents.§														
Motor cycle	47	21	—	—	125	6	—	—	—	—	172	27		
,, ,, and pedal cycle	—	—	10	1	7	1	—	—	—	—	17	2		
,, ,, ,, motor car	—	—	—	—	74	9	1	—	—	—	75	9	57	6
,, ,, ,, motor van, lorry	—	—	—	—	59	—	—	—	—	—	59	—		
,, ,, ,, motor bus	—	—	—	—	16	2	—	—	—	—	16	2		
Motor car*	233	110	122	16	—	—	89	47	—	—	444	173	75	27
Motor van or lorry*	161	64	68	16	1	—	43	2	—	—	273	82	46	13
Motor or trolley bus	40	30	—	—	—	—	15	8	—	—	55	38	9	6
Motor charabanc or coach	2	2	—	—	—	—	—	—	—	—	2	2		
Other motor vehicles	4	1	—	—	—	—	3	—	—	—	7	1	14	4
Collisions of motor vehicles	—	—	23	5	4	—	47	16	—	—	74	21		
Horse vehicles	4	4	—	—	—	—	2	1	—	—	6	5	1	1
Pedal cycles, other or undefined vehicles	29	21	69	8	—	—	—	—	—	—	98	29	16	5
Total	520	253	292	46	286	18	200	74	—	—	1,298	391	218	61

Table LXXXIX.—*continued.*

Area of residence of deceased and type of vehicle(s) causing accident	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles (not) cycles)		Not stated		Totals		Deaths per million population	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Rural District residents.§														
Motor cycle	24	24	—	—	132	15	—	—	—	—	156	39		
„ „ and pedal cycle ..	—	—	14	1	4	—	—	—	—	—	18	1		
„ „ „ motor car ..	—	—	—	—	90	6	1	—	1	—	92	6	94	13
„ „ „ motor van, lorry	—	—	—	—	61	3	—	—	—	—	61	3		
„ „ „ motor bus ..	—	—	—	—	13	—	—	—	—	—	13	—		
Motor car*	167	71	130	30	2	—	56	20	—	—	355	121	99	33
Motor van or lorry*	88	47	63	7	—	—	25	1	—	—	176	55	49	15
Motor or trolley bus	22	13	1	—	—	—	6	5	—	—	29	18	8	5
Motor charabanc or coach ..	—	—	—	—	—	—	—	—	—	—	—	—		
Other motor vehicles ..	2	—	—	—	—	—	3	—	—	1	5	1	17	5
Collisions of motor vehicles ..	—	—	17	5	8	—	30	11	—	—	55	16		
Horse vehicles	20	3	—	—	—	—	21	—	—	—	41	3	11	1
Pedal cycles, other or undefined vehicles	30	8	109	13	—	—	—	—	—	—	139	21	39	6
Total	353	166	334	56	310	24	142	37	1	1	1,140	284	316	78

* Including collisions with pedal cycles.
§ Outside Greater London.

Table LXXXIX divides the deaths from road accidents for 1937 not only by the type of vehicle causing the accident but according to whether the person killed was a pedestrian, rider of a pedal cycle, rider of a motor-cycle or occupant of a vehicle other than a pedal or motor-cycle and whether resident in Greater London, a county borough, other urban district or rural district. This information was obtained with regard to 5,960 out of the 5,963 deaths. In the final column the deaths have been expressed as rates per million residents of the areas in question.

In the country as a whole 2,844 of the deaths, or 47·7 per cent. of the number for which the information was given, were of pedestrians, compared with 50·4 per cent. in 1936; 1,231 or 20·7 per cent. were of pedal cyclists, 1,065 or 17·9 per cent. were of motor cyclists and the remaining 820 or 13·8 per cent. were of occupants of cars or other vehicles. When divided according to sex and area of residence, the proportions are as follows :—

	Percentage of all road deaths for the specified sex and area							
	Pedestrians		Pedal cyclists		Motor cyclists		Occupants of vehicles	
	M.	F.	M.	F.	M.	F.	M.	F.
England and Wales ..	40	69	24	11	22	6	14	14
Greater London	43	76	22	8	19	5	16	11
County boroughs	48	74	21	8	19	6	12	12
Other urban districts ..	40	65	22	12	22	5	16	18
Rural districts	31	58	29	20	27	8	13	14

Amongst males, motor-cyclists comprise 27 per cent. and pedestrians 31 per cent. of the deaths of rural residents, whereas motor-cyclists form less than 20 per cent. and pedestrians about 45 per cent. of the deaths of residents in large towns. Amongst females, pedal cyclists comprise 20 per cent. of the deaths of rural residents compared with only 8 per cent. for residents in large towns.

Comparison with 1936 shows that amongst residents in rural districts deaths of pedestrians declined from 586 to 519 whereas deaths of occupants of vehicles other than cycles rose from 139 to 179, and amongst residents of the urban districts pedestrian deaths fell from 807 to 773, whilst deaths in vehicles rose from 188 to 274. Greater London showed a similar change (674 to 646 for pedestrians, 126 to 169 for occupants of vehicles), but the county boroughs showed no appreciable alteration.

The percentage ratio of male to female deaths is 169 for pedestrians, 607 for pedal cyclists, 1,070 for motor cyclists and 304 for occupants of vehicles.

The percentage distributions of deaths of pedestrians according to the vehicles causing the accident in each area were as follows :—

	Greater London	County boroughs	Other urban areas	Rural districts
Motor cycles*	7	6	9	9
Motor cars†	42	41	44	46
Other motor vehicles ..	44	45	40	34
Horse vehicles	1	2	1	4
Pedal cycles, other or undefined	6	6	6	7

* Including collisions with pedal cycle, motor car, van, lorry or bus.
† Including collisions with pedal cycles.

The final column of Table LXXXIX shows that the death rate amongst males resident in rural districts resulting from road accidents in general was 316 per million compared with about 200 amongst males resident in towns. This rural excess is chiefly due to motor cycle accidents, causing a male rural mortality of 94 per million, compared with 44 for males resident in county boroughs and 43 for males resident in Greater London, partly to motor car accidents (99 compared with about 60 in towns), partly to pedal cycles and miscellaneous vehicles (39 compared with about 15) and partly to horse vehicle accidents (11 compared with about 3 per million for males resident in towns). For females, residence in rural districts does not impose so large an excess of mortality from road accidents, the rate of 78 per million being smaller than that for Greater London, though larger than for females resident in other towns.

199, 200. **Ill-defined Diseases.**—These headings in the International List of Causes of Death, to which 1,237 deaths have been allocated, exclude the ill-defined diseases of infancy and old age, 158 and 162 (*b*). In the more comprehensive sense resulting from their inclusion, the deaths from ill-defined causes in 1937 numbered 18,684, or 3·67 per cent. of the total as compared with 3·77 in 1936, 3·96 in 1935, 3·78 in 1934, 3·89 in 1933 and 9·67 in 1911.

Inquiries sent to medical practitioners and coroners requesting further information as to indefinitely certified deaths amounted to 9,588, and to these 8,391 replies were received, with results to classification, some of the most important of which are set out in Table XC.

The total additions to certain definite headings resulting from these inquiries were as follows :—To influenza, 53; to encephalitis lethargica, 78; to cerebro-spinal fever, 82; to tuberculosis of the respiratory system, 147; to other forms of tuberculosis, 112; to venereal diseases, 103; to cancer, 1035; to diseases of the spinal cord, 28 ; to general paralysis of the insane, 10 ; to disseminated sclerosis, 11; to arterio-sclerosis, 77; to ulcer of stomach and duodenum, 139; to appendicitis, 94; to biliary calculi, 114; to chronic nephritis, 70; to diseases of the prostate, 309; to puerperal sepsis, 43; to congenital malformations, 86.

In addition to the foregoing, 3,295 inquiries were addressed to medical practitioners who had initialled statement " B " on the back of the new form of medical certificate, thereby indicating the possibility of their being in a position to furnish additional information respecting the certified cause of death as the result of a " post-mortem " or laboratory examination which was not available at the time of signing the certificate. Of the 2,852 replies received to these inquiries, 1,440 amended the original certification.

Anæsthetics.—The usual annual statement of deaths during or connected with the administration of an anæsthetic is continued. This is obtained by secondary tabulation of these deaths, since the primary tabulation, represented by Table 21, classifies all such deaths to the disease or injury on account of which the anæsthetic was administered.

The total number of deaths in Table XCI, 894, is 55 more than in 1936, and is the largest number recorded. During the years for which fully comparable figures can be stated these deaths first increased slowly from 276 in 1911 to 366 in 1920, declined to 336 in 1922, rose to 446 and remained about that level to 1925. They then increased rapidly to 730 in 1929, and have risen further during the last eight years.

Table XC.—Replies to Inquiries respecting Indefinitely Certified Causes of Death, 1937.

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Croup	7	7	Laryngismus Stridulus 1, Laryngitis 2, Diphtheria 2.
Pyæmia, Septicæmia, etc.	105	90	Diseases of the Tonsils 8, Puerperal Sepsis 1, Diseases of the Skin 20.
Tuberculosis	85	84	Tuberculosis of the Respiratory System 47, Tuberculosis of the Central Nervous System 1, Tuberculosis of Intestine and Peritoneum 3, Tuberculosis of the Vertebral Column 3, Tuberculosis of Other Bones and Joints 6, Tuberculosis of Skin and Subcutaneous Tissue 2, Tuberculosis of Lymphatic System 3, Tuberculosis of Genito-urinary System 1, Disseminated Tuberculosis 6.
Cancer (part or organ not stated).	1,252	1,217	Part or Organ stated in 1,203 cases.
Cerebral Tumour (P.M. Cases)	305	295	Tuberculosis of Central Nervous System 3, Syphilis 1, Cancer 158, Glioma 95.
Tumour of other sites	861	831	Syphilis 5, Cancer 648.
Rheumatism ..	562	560	Rheumatic Fever 121, Chronic Rheumatism 2, Rheumatoid Arthritis 2, Rheumatic Heart Disease 422.
Encephalitis	212	192	Measles 2, Whooping Cough 2, Influenza 16, Polioencephalitis 2, Encephalitis Lethargica 70, Tuberculosis of Central Nervous System 1, Syphilis 6, Other Forms of Encephalitis 48, Meningitis 8.
Basal or Basic Meningitis.	28	27	Cerebro-Spinal Fever 10, Tuberculosis of Central Nervous System 7, Meningitis—Other Forms 3.
Posterior or Post Basal or Post Basic Meningitis.	30	29	Cerebro Spinal Fever 17, Tuberculosis of Central Nervous System 3, Meningitis—Other Forms 5.
Cerebro spinal Meningitis.	63	62	Influenza 1, Cerebro Spinal Fever 48, Tuberculosis of Central Nervous System 3, Meningitis—Other Forms 6.
Spinal Sclerosis ..	7	7	Other Diseases of the Spinal Cord 4, Disseminated Sclerosis 1.
Cerebral Sclerosis ..	9	9	Disseminated Sclerosis 2.
Paraplegia	54	50	Syphilis 3, Other Diseases of the Spinal Cord 4, Disseminated Sclerosis 1.
General Paralysis (outside asylums).	9	9	General Paralysis of the Insane 4.
Paralysis	15	14	Syphilis 2, Other Diseases of the Spinal Cord 3, Cerebral Hæmorrhage, Apoplexy, etc., 3.
Aortitis, Arteritis and Endarteritis.	91	90	Syphilis 35, Arterio Sclerosis 5.
Fibroid Phthisis ..	62	61	Tuberculosis of the Respiratory System 49, Chronic Interstitial Pneumonia 2.
Hæmoptysis	24	21	Tuberculosis of the Respiratory System 9.
Stomatitis	10	10	Thrush, Aphthous Stomatitis etc., 2.

Table XC.—*continued.*

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Stricture of Œsophagus	20	18	Cancer 7.
Hæmatemesis ..	22	21	Cancer 2, Ulcer of Stomach and Duodenum 12.
Pyloric Stenosis, Obstruction, etc.	53	53	Cancer 11, Ulcer of Stomach and Duodenum 28.
Jaundice	49	46	Influenza 1, Syphilis 1, Weil's Disease 5, Cancer 8, Biliary Calculi 11.
Peritonitis	125	114	Tuberculosis of Intestine and Peritoneum 8, Cancer 7, Ulcer of Stomach and Duodenum 6, Appendicitis 29, Intestinal Obstruction 10, Diseases of the Female Genital Organs 6.
Pemphigus of Infants	63	58	Syphilis 4.
Hydrocephalus ..	59	58	Tuberculosis of Central Nervous System 1, Congenital Hydrocephalus 41.
Violence	387	385	Precise Form of Suicide 89, Drowning 4, Injury by Fall 59, Injury in Mines and Quarries 12, Injury by Machinery 12, Injury by Crushing 96.
Syncope, Heart Failure	238	227	Influenza 4, Diseases of the Heart 134, Arterio Sclerosis 9, Bronchitis 11, Nephritis 13.
Operation	860	851	Cancer 66, Tumours of Female Genital Organs 51, Ulcer of Stomach and Duodenum 43, Appendicitis 17, Hernia, Intestinal Obstruction 73, Biliary Calculi 78, Diseases of the Prostate 216, Diseases of the Female Genital Organs 51, Congenital Malformations 7, Violence 7.
Other Indefinite Forms of Certification.	2,724	2,561	—
Total ..	8,391	8,057	—

In addition 1,707 inquiries were made in connection with parturition.

For the years before 1911 the record is contained in the tables of accidental deaths, but certain causes—strangulated hernia and cancer—were at that time preferred in tabulation to the anæsthetic used. In 1937 the 894 deaths included 125 associated with cancer, and 56 with hernia, so for comparison with the years prior to 1911 the number of deaths should be reduced to 713.

Subject to this allowance for the more comprehensive nature of the figures from 1911 onwards, Table XCII provides a record of the deaths since 1901 by sex and age.

The increase since 1911–15 has been relatively more rapid amongst females (276 per cent.) than amongst males (174 per cent.), and has been greatest at ages over 55, and least for males aged 35–45.

Table XCI.—Deaths under or connected with the Administration of various Anæsthetics, according to Sex and Age—1937.

Anæsthetic.		All Ages.	Age. 0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Anæsthesia by inhalation.																
Chloroform*	M.	20	–	1	–	–	–	1	1	–	4	2	3	3	2	3
	F.	30	2	1	1	2	1	6	5	4	2	3	2	1	–	–
Chloroform and nitrous oxide*	M.	5	–	–	–	–	–	–	–	2	–	1	1	–	1	–
	F.	5	–	–	–	–	–	–	–	2	1	1	–	–	–	1
Chloroform, nitrous oxide and stovaine*	M.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Chloroform and evipan	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Chloroform and ether*	M.	54	1	3	2	2	1	1	5	4	4	5	4	6	9	7
	F.	52	1	4	5	–	4	3	1	7	3	6	2	3	11	2
Chloroform, ether and nitrous oxide*	M.	2	–	–	–	–	1	–	–	–	–	–	1	–	–	–
	F.	2	–	–	–	–	–	–	–	1	–	1	–	–	–	–
Chloroform, ether and ethyl chloride	M.	6	–	–	–	1	–	1	–	1	–	–	2	1	–	–
	F.	6	–	–	1	–	–	–	–	–	2	–	1	1	–	1
Chloroform, ether and avertin	F.	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Chloroform and ethyl chloride	F.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Ether*	M.	92	9	20	4	4	5	5	3	3	4	3	6	5	11	10
	F.	89	6	6	6	3	4	4	6	6	10	6	7	5	11	9
Ether and nitrous oxide*	M.	61	–	2	3	3	6	6	2	1	3	1	5	7	15	7
	F.	58	–	2	4	2	5	1	4	8	–	6	1	5	11	9
Ether and ethyl chloride*	M.	51	1	18	10	6	3	–	–	–	1	1	1	4	1	5
	F.	33	1	8	9	1	2	2	1	–	–	–	3	–	4	2
Ether, ethyl chloride and nitrous oxide*	M.	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Ether and avertin*	M.	3	–	1	–	–	–	–	–	–	–	–	1	–	–	1
	F.	4	–	–	–	–	–	1	–	–	–	–	1	–	–	2
Ether, nitrous oxide and avertin*	M.	2	–	–	–	1	–	–	–	–	–	–	1	–	–	–
	F.	3	–	–	–	–	–	1	1	–	–	–	–	–	1	–
Ether and evipan*	M.	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–
	F.	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Ether, nitrous oxide and evipan*	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Ether, nitrous oxide and novocaine*	M.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Ether, omnopon and hyoscine	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Ether and pentothal	F.	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Ethyl chloride*	M.	15	2	3	6	–	–	–	–	–	–	–	–	–	3	1
	F.	10	1	5	2	–	–	–	–	–	1	–	–	–	–	1
Ethyl chloride and nitrous oxide*	F.	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Ethyl chloride and avertin	F.	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Ethyl chloride and evipan	F.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
A.C.E.	M.	5	3	–	–	–	–	1	1	–	–	–	–	–	–	–
Nitrous oxide	M.	48	–	3	2	1	2	2	3	1	1	–	1	7	12	13
	F.	49	–	2	2	1	3	2	6	1	7	4	9	3	4	5
Nitrous oxide and avertin	M.	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–
	F.	4	–	–	–	–	–	–	–	2	–	1	–	–	1	–
Nitrous oxide and cyclopropane	F.	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Nitrous oxide, decicain and novocaine	F.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Nitrous oxide and evipan	M.	2	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Nitrous oxide and novocaine	M.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Nitrous oxide and percaine	M.	2	–	–	–	–	–	–	–	–	–	–	1	1	–	–
	F.	2	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Nitrous oxide and stovaine	F.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–

Table XCI.—*continued.*

Anæsthetic.		All Ages.	Age.													
			0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Other forms of Anæsthesia.																
Avertin	M.	2	–	–	–	–	–	–	–	1	–	–	–	–	1	–
	F.	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Cocaine	M.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
	F.	3	–	–	–	–	–	–	1	–	–	1	–	–	–	1
Decicain	F.	2	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Evipan	M.	14	–	–	1	–	–	2	–	2	–	1	1	1	3	3
	F.	8	–	–	–	–	–	1	2	–	1	–	1	1	–	2
Evipan and novocaine	M.	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Evipan, omnopon and scopolamine	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Evipan and percaine	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Novocaine, durocaine, planocaine or spinocain.	M.	10	–	1	–	–	–	1	1	–	2	1	–	–	1	3
	F.	13	–	–	–	–	–	2	1	2	–	1	1	1	2	3
Novocaine and stovaine	M.	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Novocaine and morphia	F.	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Omnopon and scopolamine	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
	F.	2	–	–	–	–	–	–	1	–	–	–	1	–	–	–
Paraldehyde	M.	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–
Percaine	M.	26	–	–	–	–	–	–	3	–	–	2	2	1	7	11
	F.	24	1	–	–	–	–	–	1	1	1	2	–	1	5	12
Stovaine	M.	6	–	–	–	–	–	–	–	–	–	–	1	–	1	4
	F.	10	–	–	–	–	–	–	1	1	–	1	–	–	5	2
Kind not stated	M.	16	–	–	–	–	–	1	–	–	1	–	3	2	4	5
	F.	15	–	–	2	–	–	1	1	1	2	–	–	2	2	4
Total	M.	458	16	52	30	18	18	22	19	16	21	19	38	38	75	76
	F.	436	12	28	32	9	19	25	32	39	32	33	31	25	60	59

* *Note.*—In this table in previous years deaths after administration of nitrous oxide in conjunction with chloroform, ether or ethyl chloride were not separated but were included in the totals for chloroform, etc. Thus "ether" in the tables for 1936 and preceding years corresponds with the combined totals of "ether" and "ether and nitrous oxide" of this table; "chloroform and ether" in previous years corresponds with the combined totals of "chloroform and ether," "chloroform, ether and nitrous oxide" of this table.

The anæsthetic agents recorded on death certificates have altered considerably in recent years, as may be seen from Table XCIII. A considerable increase is recorded in 1937 in the deaths associated with nitrous oxide in combination with ether, which numbered 119, and with nitrous oxide alone, which reached 97.

It need scarcely be pointed out that these fatalities depend upon the extent to which the various agents are used as well as upon the risk attaching to them. But unfortunately the deaths associated with each type of anæsthetic cannot be collated with the number of its administrations. It is not even possible to say whether, or to what extent, the rapid increase in the number of these deaths implies increased mortality under anæsthetics. The number of administrations is known to be increasing, but cannot be estimated. The deaths tabulated, moreover, can only be those under, not those caused by, anæsthesia. It is impossible from certification to distinguish between deaths from operation under anæsthesia and deaths due to the anæsthetic itself.

Of the 894 deaths in 1937 shown in Table XCII, 774 (87 per cent.) were classed to the 25 headings enumerated in Table XCIV, the remainder being of very varied causation.

Table XCII.—Deaths under or associated with Anæsthesia 1901–37.

Year.	Males.									Females.								
	All ages	0–	5–	15–	25–	35–	45–	55–	65–	All ages	0–	5–	15–	25–	35–	45–	55–	65–
Yearly average:																		
1901–05* ..	95	14	20	9	13	16	11	7	4	53	6	9	7	11	8	8	3	2
1906–10* ..	125	26	20	12	16	18	16	9	8	77	7	14	9	18	11	10	4	3
1911–15 ..	167	30	23	14	20	28	24	16	10	116	14	17	15	16	22	18	10	5
1916–20 ..	188	36	25	25	27	22	20	19	13	119	11	16	14	21	22	17	7	9
1921–25 ..	229	40	28	20	18	27	36	37	24	169	20	17	17	30	29	25	17	12
1926–30 ..	361	56	47	30	26	37	50	62	53	288	29	29	29	44	51	49	34	23
1931–35 ..	432	63	48	37	33	43	56	80	71	353	34	40	36	60	55	50	43	35
1921	204	30	29	16	16	19	34	30	30	133	16	23	16	24	21	19	11	3
1922	185	29	21	16	9	27	30	35	18	151	16	15	12	29	31	26	12	10
1923	262	45	37	29	17	38	35	34	27	184	22	23	14	23	32	32	23	15
1924	245	51	30	21	25	21	42	39	16	184	26	11	30	29	31	21	18	18
1925	249	43	25	17	23	28	39	45	29	193	22	14	15	43	32	29	23	15
1926	306	57	43	23	29	34	39	43	38	250	32	22	29	35	44	51	23	14
1927	328	43	51	25	20	30	42	70	47	268	24	28	29	46	47	40	35	19
1928	384	63	41	30	23	43	55	67	62	272	29	21	27	44	45	44	33	29
1929	414	66	61	31	25	43	63	64	61	316	35	35	27	52	52	50	43	22
1930	375	51	41	39	34	34	52	68	56	332	27	39	33	45	66	58	35	29
1931	413	60	51	44	36	41	51	73	57	310	27	40	23	60	55	43	38	24
1932	416	66	49	37	29	45	58	68	64	333	24	40	33	60	58	42	36	40
1933	425	67	47	44	22	42	56	78	69	343	35	39	47	50	44	48	47	33
1934	440	66	45	29	37	43	48	91	81	374	43	43	38	67	45	53	46	39
1935	467	57	47	31	43	45	68	91	85	403	42	37	37	63	75	64	47	38
1936	453	69	53	39	44	39	57	73	79	386	41	33	31	69	59	54	55	44
1937	458	68	48	40	55	40	76	75	76	436	40	41	44	71	65	56	60	59
Deaths in later periods compared with those of 1911–15 taken as 100.																		
Yearly average:																		
1911–15 ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1916–20 ..	113	120	109	179	135	79	83	119	130	103	79	94	93	131	100	94	70	180
1921–25 ..	137	133	122	143	90	96	150	231	240	146	143	100	113	188	132	139	170	240
1926–30 ..	216	187	204	214	130	132	208	388	530	248	207	171	193	275	232	272	340	460
1931–35 ..	259	210	209	264	165	154	233	500	710	304	243	235	240	375	250	278	430	700
1931	247	200	222	314	180	146	213	456	570	267	193	235	153	375	250	239	380	480
1932	249	220	213	264	145	161	242	425	640	287	171	235	220	375	264	233	360	800
1933	254	223	204	314	110	150	233	488	690	296	250	229	313	313	200	267	470	660
1934	263	220	196	207	185	154	200	569	810	322	307	253	253	419	205	294	460	780
1935	280	190	204	221	215	161	283	569	850	347	300	218	247	394	341	356	470	760
1936	271	230	230	279	220	139	238	456	790	333	293	194	207	431	268	300	550	880
1937	274	227	209	286	175	143	317	469	760	376	286	241	293	444	295	311	600	1180

* Excluding deaths from cancer and strangulated hernia—*see* page 165.

The numbers of deaths reported from different classes of institutions, etc., in various regions of the country are stated in Table XCV, in which, as place of occurrence is evidently of more interest for these deaths than place of residence, they have been tabulated by area of registration.

Compared with the previous year, an increase in deaths was recorded in the North, South-East and East, the North showing the greatest rise, from 280 to 350, The deaths of females in hospitals and Public Assistance Institutions increased by 49, whilst those of males declined by 5.

Table XCIII.—Deaths under or associated with the Administration of Various Anæsthetics in each year, 1926 to 1937.

	Sex.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Anæsthetics of the Methane series :—													
Chloroform (1) ..	M.	54	48	75	63	51	58	52	52	34	38	33	25
	F.	47	53	36	41	37	37	36	31	34	27	36	35
Ether (alone) (2) ..	M.	102	94	110	126	119	119	118	107	96	113	94	92
	F.	65	69	105	114	122	109	106	97	89	94	84	89
Ether and Nitrous Oxide (only).	M.	3	7	8	16	7	15	12	27	39	43	40	61
	F.	2	3	3	7	8	5	12	18	28	38	38	58
Chloroform and ether (1)	M.	89	100	120	116	115	126	103	91	104	80	88	56
	F.	78	69	80	93	87	79	68	87	76	56	62	54
A.C.E. mixture ..	M.	9	9	5	3	1	10	3	4	4	2	1	5
	F.	8	2	—	6	3	—	5	1	—	5	4	—
Ether and ethyl chloride (1).	M.	10	15	9	12	16	28	24	31	35	34	54	52
	F.	7	17	7	13	16	10	19	26	34	43	34	33
Other mixtures, containing chloroform or ether (3).	M.	4	5	6	8	5	2	8	6	11	7	11	17
	F.	7	7	3	4	5	8	11	11	12	16	11	17
Ethyl chloride (1) ..	M.	4	8	6	7	6	3	7	8	13	9	11	15
	F.	3	6	3	3	4	11	7	4	5	7	12	11
Barbituric Acid group :—													
Nembutal, evipan (alone or with cocaine derivative).	M.	—	—	—	—	—	—	—	1	6	19	13	16
	F.	—	—	—	—	—	3	1	1	9	18	6	8
Avertin (alone or with cocaine derivative).	M.	—	—	—	1	1	2	5	5	3	12	2	2
	F.	—	—	—	1	1	4	6	4	6	5	8	1
Nitrous oxide (alone) ..	M.	9	13	18	27	23	21	36	34	33	43	36	48
	F.	6	19	12	11	18	22	27	24	35	31	33	49
Opium or Morphine and their preparations with Atropine, Hyoscine or cocaine derivative (4).	M.	—	1	—	—	1	—	1	—	—	—	—	1
	F.	—	—	—	—	1	1	1	—	—	1	—	3
Cocaine and its preparations and substitutes (without any of above) :—													
Cocaine	M.	1	2	1	2	1	1	3	4	2	4	2	1
	F.	1	—	1	—	—	—	2	—	1	3	2	3
Stovaine or synonyms (5).	M.	3	4	2	3	4	2	6	5	7	8	3	6
	F.	6	5	3	6	3	2	6	5	10	9	3	10
Novocaine or synonyms (6).	M.	2	5	10	13	13	10	24	29	24	19	18	10
	F.	1	3	6	5	12	6	12	16	11	17	19	13
Percaine or synonyms (7).	M.	—	—	—	—	1	7	10	11	18	12	23	26
	F.	—	—	—	1	2	6	13	13	18	12	17	24
Others (including combinations of cocaine preparations).	M.	1	1	—	4	—	2	1	2	3	6	4	1
	F.	2	1	3	2	1	1	—	2	—	3	8	2
Miscellaneous, including combinations not specified above.	M.	—	1	1	1	—	—	—	2	2	1	2	8
	F.	—	1	—	—	—	1	—	1	2	3	1	11
Kind not stated	M.	15	15	13	12	11	7	3	6	6	17	18	16
	F.	17	13	10	9	12	5	1	2	4	15	8	15
Total	M.	306	328	384	414	375	413	416	425	440	467	453	458
	F.	250	268	272	316	332	310	333	343	374	403	386	436

Notes.—(1) Including combinations with nitrous oxide, as in the corresponding lines of this table in previous years.

(2) The corresponding line of this table in previous years included ether with nitrous oxide, now shown separately.

(3) Including combinations of chloroform or ether with morphia, atropine, nembutal or cocaine derivatives or substitutes.

(4) Includes omnopon.

(5) Amylocaine.

(6) Planocaine, procaine, durocaine, spinocaine, neocaine, allocaine, syncaine, ethocaine, kerocaine.

(7) Nupercaine.

Table XCIV.—Classification of Deaths under or Associated with Anæsthesia, 1937.

	Cause to which Death was assigned.	Males.	Females.		Cause to which Death was assigned.	Males.	Females.
24–32	Non-respiratory tuberculosis	5	—	121	Appendicitis ..	49	47
45–53	Cancer	75	50	122 *a*	Hernia	40	16
54a	Non malignant tumours of female genital organs.	—	25	122 *b*	Intestinal obstruction.	24	8
54*b*	Non malignant tumours other than female genital organs.	9	12	126	Biliary calculi ..	3	14
				127	Diseases of the gall bladder.	1	4
				129	Peritonitis.. ..	—	6
				137	Diseases of the prostate.	17	—
66*a*	Simple goitre ..	—	6	138 (pt.)	Circumcision ..	10	—
66*b*	Exophthalmic goitre	1	19	139	Diseases of female genital organs.	—	16
89*b*	Diseases of the mastoid sinus.	13	12	140–150	Childbirth and abortion.	—	61
104	Diseases of the nasal fossæ and annexa.	9	3	154	Acute infective osteomyelitis.	4	3
110 : 1	Empyema.. ..	9	—	157	Congenital malformations.	11	9
115 : 1 (pt.)	Extraction of teeth.	13	12	163–198	Violence	51	29
115 : 3	Diseases of the tonsils.	20	28				
117	Ulcer of the stomach or duodenum.	28	2				

Table XCV.—Deaths under Anæsthetics Registered in 1937. Distribution by Part of Country and Place of Occurrence.

		Greater London.	South-East ex Greater London.	North	Midland.	East	South-West.	Wales	Totals England and Wales.
Hospitals	M.	66	51	132	50	19	16	16	350
	F.	74	36	124	36	7	9	18	304
Public Assistance Institutions	M.	35	10	25	5	—	1	1	77
	F.	32	11	24	11	—	1	—	79
Mental Hospitals ..	M.	—	—	—	—	—	—	—	—
	F.	—	1	1	—	—	—	—	2
Nursing Homes	M.	3	1	8	1	2	1	1	17
	F.	2	3	15	4	—	4	—	28
Elsewhere	M.	5	—	7	1	—	1	—	14
	F.	2	2	14	1	—	3	1	23
Total	M.	109	62	172	57	21	19	18	458
	F.	110	53	178	52	7	17	19	436

There were in 1937 39 deaths under anæsthetics in which record was made of the presence of *status lymphaticus* but which have been referred in tabulation to the condition occasioning the administration of the anæsthetic. The sex and age distribution of these was as follows :—

	All Ages.	0–	5–	10–	15–	20–	25–	35–	45–	55–
Males	28	17	3	4	2	2	—	—	—	—
Females	11	4	3	—	1	—	2	1	—	—

Site Distribution of Cancer in Large Towns and Other Areas of England and Wales, 1921-30 and 1937.

No detailed study of cancer deaths according to the site of the primary growth has been made hitherto in these reports for separate localities, the reasons for this being (1) the belief that cancer was a general disease and the site of its manifestation of only secondary importance, (2) the comparatively slight local variation of cancer mortality as a whole in different regions of England and Wales (*see* Table LIX), (3) uncertainty as to the uniformity in accuracy of diagnosis over different areas of the country and as to whether local variations in death rates for separate sites could be relied upon as indicating anything more than such lack of uniformity, and (4) the necessity for dealing with large numbers of deaths in order to establish the validity of local differences for individual sites. Recent research has tended to show, however, that the causative factors of cancer are complex and that occupational and social conditions have very different relations with cancer mortality according to the site of growth selected for study, and this leads to the expectation that the geographical distribution of mortality may also be distinctive and different for each site. If this is found to be the case a study of these differences may well throw some additional light upon the nature of the causative factors involved.

The diagnosis of cancer of superficial sites such as the skin, mouth, breast or cervix uteri can scarcely now be subject to very important differences within England and Wales, and the cessation of increase in death-rates which has occurred for cancer of some of the less accessible sites suggests that for some of these also a point has been reached in recent years at which the degree of accuracy of death certification is not widely different in different localities. Within the larger towns at least diagnostic facilities have tended to become more uniform and a comparison of the site distributions of cancer deaths amongst residents in such towns since 1921 ought to furnish data of sufficient reliability for profitable comparison. In the present analysis the 13 towns of 250,000 population or over have been compared, together with certain residual areas which appeared from preliminary studies to be of special interest, and adequate numbers of deaths have been obtained by aggregating the deaths for each sex during the decennium 1921–30 at two age groups 45–65 and 65 and over. The deaths by site, sex, age and locality of residence have been extracted from tabulations which were prepared for and with the aid of a grant from the British Empire Cancer Campaign. As an additional check upon the resultant conclusions the site distributions have also been determined for the most recent year 1937, combining all ages.

Before analysing the data for separate sites it is necessary to ascertain to what extent the death rates from cancer of all sites combined vary in the towns and regions selected, and Table XCVI. gives the mean annual rates per million resident civilian population

Table XCVI.—Cancer of All Sites in Towns of 250,000 population or over and certain other areas. Mean annual death rates per million living and per cent. of London rates, at ages 45-65 and 65 upwards in 1921-30.

	MALES.				FEMALES.			
	Mean annual rates per million.		Per cent. of London rate.		Mean annual rates per million.		Per cent. of London rate.	
	45—	65 & over	45—	65 & over	45—	65 & over	45—	65 & over
ENGLAND and WALES	2,912	10,220	84	89	3,024	8,600	96	99
LONDON Admin. County	3,475	11,537	100	100	3,150	8,688	100	100
England and Wales excluding London	2,841	10,063	82	87	3,007	8,588	95	99
Manchester ..	4,197	12,453	121	108	3,321	8,872	105	102
Liverpool	3,590	10,658	103	92	3,122	7,948	99	91
Sheffield	3,470	11,579	100	100	3,113	8,442	99	97
Stoke-on-Trent ..	3,413	10,373	98	90	3,221	8,383	102	96
Birmingham ..	3,362	11,070	97	96	3,082	8,969	98	103
Nottingham ..	3,255	10,738	94	93	3,229	7,917	103	91
Leeds	3,213	10,224	92	89	3,189	8,705	101	100
Kingston-upon-Hull	3,199	10,709	92	93	3,598	8,789	114	101
Portsmouth ..	3,174	10,419	91	90	2,922	7,883	93	91
Bradford	3,070	10,612	88	92	3,238	8,987	103	103
Bristol	2,852	10,075	82	87	2,950	8,379	94	96
Leicester	2,760	11,000	79	95	3,198	9,151	102	105
Remainder of North IV ..	3,086	10,018	89	87	3,057	8,551	97	98
Wales II	2,873	10,352	83	90	3,333	9,350	106	108
Remainder of Midland I ..	2,788	9,449	80	82	2,883	8,306	92	96
Remainder of South East	2,741	10,767	79	93	2,885	8,748	92	101
North I	2,719	9,101	78	79	3,074	8,451	98	97
South West ..	2,559	9,614	74	83	2,932	8,258	93	95
Remainder of England & Wales	2,564	9,486	74	82	3,009	8,605	96	99

during 1921–30 for each sex at the two ages and expresses the rates also in terms of the corresponding rate for London Administrative County taken as 100. The numbers of deaths on which these rates are based are shown in the last column of Table XCVIII. The age distributions of the various populations *within* the age group 45–65 do not vary to any important extent, and this is also generally true of the urban populations aged 65 and over. In rural areas such as Wales II or the South West the population, especially of females, tends to contain larger proportions at ages over 75, at which ages cancer death rates usually tend to be higher, and somewhat exaggerated rates may therefore be expected in rural divisions for the age group 65 and over on that account. In Table XCVI the towns have been arranged in descending order of the male death rates at 45–65, and the regional areas likewise.

London gave in 1921–30 a male cancer rate 22 per cent. in excess of the rest of England and Wales at ages 45–65 and 15 per cent. in excess at 65 upwards, whereas for females the excess was only 5 per cent. at 45–65 and 1 per cent. at 65 upwards. This contrast may be due partly to more complete diagnosis of cancer of inaccessible sites

in London, since these form a larger proportion of male than of female cancers. The contrast between London and the South West region, where the availability of diagnostic facilities is poor, is still more pronounced, the excess for males being 36 per cent. at 45–65 and 20 per cent. at 65 upwards and for females 7 per cent. at 45–65 and 5 per cent. at 65 upwards. Comparing the large towns, where the accuracy of diagnosis was probably fairly uniform, it is seen that (1) the male mortality indices at 45–65 in terms of London ranged from 121 in Manchester to 79 in Leicester, and, taking into account the numbers of deaths, Manchester had a cancer rate significantly above, whilst Bradford, Bristol, Kingston-upon-Hull, Portsmouth, Leeds and Leicester gave rates considerably below that of London; (2) the male mortality indices at 65 upwards ranged from 108 in Manchester to 87 in Bristol, Manchester's rate being significantly above whilst all the other towns except Birmingham, Leicester and Sheffield gave rates considerably below that of London; (3) the female mortality indices showed less variation than and little correspondence with the male rates, Kingston-upon-Hull and Manchester at 45–65 showing considerable excess over London, whilst Portsmouth and Bristol at 45–65 and Liverpool, Nottingham and Portsmouth at 65 upwards had rates considerably below that of London*

Comparing the residual areas one with another, Wales II returned the highest female mortality at each age, whilst North IV and Wales II gave the highest male rates at 45–65 and the South East and Wales II at 65 upwards.

Table XCVII.—Site distribution of Fatal Cancer (per cent. of all cancer deaths) in London, England and Wales and U.S.A. registration area, 1937.

Site (descriptions as in Table XCVIII).	MALES.				FEMALES.			
	London A.C.	England and Wales.		U.S.A.	London A.C.	England and Wales.		U.S.A.
		Excluding London.	Including London.			Excluding London.	Including London.	
Tongue	3·30	3·01	3·04	1·28	—	—	—	—
Mouth, tonsil, etc.	2·92	2·43	2·48	1·42	—	—	—	—
Œsophagus.. ..	6·97	5·08	5·29	3·02	1·53	2·12	2·06	0·71
Stomach	19·66	22·23	21·94	23·98	15·08	16·69	16·52	13·89
Liver, pancreas ..	6·47	7·82	7·67	10·41	7·02	7·87	7·78	10·19
Intestine (except rectum)	10·36	14·06	13·65	10·65	14·76	15·83	15·72	11·37
Rectum, anus ..	9·19	11·04	10·83	6·55	7·50	6·10	6·25	4·50
Larynx, lung ..	18·61	10·86	11·73	6·75	4·46	2·90	3·07	2·16
Bladder	4·03	3·08	3·19	4·58	2·04	1·23	1·32	2·02
Prostate	6·11	6·21	6·20	11·12	—	—	—	—
Skin, scrotum, penis	1·80	2·89	2·76	3·53	—	—	—	—
Skin, vagina, etc...	—	—	—	—	2·29	2·76	2·71	2·42
Uterus	—	—	—	—	12·02	12·91	12·82	21·10
Ovary, Fallopian tubes	—	—	—	—	4·60	4·88	4·85	3·90
Breast (females) ..	—	—	—	—	20·46	19·82	19·89	17·77
Other sites (males)	10·58	11·29	11·22	16·71	—	—	—	—
Other sites (females)	—	—	—	—	8·34	6·89	7·01	9·97
ALL SITES ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

* By "considerable" is here meant a difference amounting to twice its standard error or more.

Table XCVIII gives for the 13 towns and 7 residual areas the cancer deaths at ages 45–65 and 65 upwards in 1921–30 and at all ages in 1937, distributed amongst 12 sites or groups of sites of the primary growth. At the head of the table the percentage distributions of the London cancer deaths amongst the 12 sites, that is to the proportionate site-mortalities, are shown. Table XCVII compares the 1937 proportionate mortalities for London with the corresponding rates in England and Wales (including and excluding London) and in the registration area of the United States of America* in the same year. The American distribution differs from that of England and Wales by showing lower proportionate rates for the œsophagus, respiratory organs, intestine and rectum in both sexes, for the tongue and mouth in males and for the stomach, ovary, skin, vagina and breast in females and higher proportions for the liver, pancreas, bladder and undifferentiated sites in both sexes, for the stomach, prostate and skin in males and for the uterus in females, the excess for prostate and uterus being specially large. The site groups differ slightly in that the duodenum is included with stomach instead of intestines in the U.S.A. figures.

Comparing London with the rest of England and Wales in Table XCVII, it should be noted first that London's crude death rate from cancer of all sites in 1937 was for males 189 per million compared with 161 elsewhere and for females 170 compared with 162, this percentage excess of 17 for males and 5 for females not being substantially altered when standardized rates are compared (*see* Table LIX). It follows that an equality of the proportionate mortalities in London and the rest of England and Wales implies an *absolute* excess for the site in question in London amounting to about one-sixth of the rate in the case of males and one-twentieth in the case of females. There was, therefore, in London males in 1937 a proportionate (and absolute) excess of cancer of the tongue, mouth, œsophagus, liver and pancreas, rectum, respiratory organs and bladder, a proportionate (and absolute) deficiency for the intestines and skin, a proportionate (but not absolute) deficiency for the stomach, and an absolute (though not proportionate) excess for the prostate. For London females there was in 1937 an appreciable proportionate (and absolute) excess for the rectum, respiratory organs and bladder and an appreciable proportionate (and absolute) deficiency for the œsophagus, stomach, liver and pancreas, intestines and skin, but no important differences for other organs. Comparison of the site distributions in 1921–30 for London with those for the rest of England and Wales, obtained from Table XCVIII, leads to the same conclusions but there was also a pronounced London excess for cancer of the ovaries and Fallopian tubes and at advanced ages for the

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* Public Health Reports, U.S.A. Public Health Service, LIV., No. 24, Table 13, p. 1052.

breast, not seen in 1937. The excess for the tongue, mouth and prostate was most pronounced at ages 65 and over.

Table XCVIII.—Cancer deaths distributed according to Site in Towns of over 250,000 population and certain other areas, and percentage site distribution in London, 1921-30 and 1937.

MALES.

		Tongue.	Mouth, Tonsils, &c.§	Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.ø	Bladder.¶	Prostate.	Skin, Scrotum, &c.‡‡	Other Sites.	ALL SITES.
London A.C.														
Deaths.														
1921–30	45–65	910	501	1,548	3,266	1,259	1,364	1,302	1,639	473	431	238	2,092	15,023
	65 and over ..	714	451	1,113	2,543	1,259	1,793	1,602	778	582	1,109	389	1,324	13,657
1937	All ages ..	119	105	251	708	233	373	331	670	145	220	65	381	3,601
Per cent. of all sites.														
1921–30.	45–65	6·06	3·33	10·30	21·74	8·38	9·08	8·67	10·91	3·15	2·87	1·58	13·93	100·00
	65 and over ..	5·23	3·30	8·15	18·62	9·22	13·13	11·73	5·70	4·26	8·12	2·85	9·69	100·00
1937.	All ages ..	3·30	2·92	6·97	19·66	6·47	10·36	9·19	18·61	4·03	6·11	1·80	10·58	100·00
Portsmouth														
1921–30.	45–65	65	20	59	145	66	66	74	42	19	13	17	132	718
	65 and over ..	37	17	45	132	67	97	90	24	24	52	26	86	697
1937.	All ages ..	9	9	8	42	14	15	23	19	6	19	5	44	213
Remainder of South-East Region														
1921–30.	45–65	959	685	1,833	4,509	1,957	2,328	2,293	1,601	610	665	385	3,176	21,001
	65 and over ..	1,028	640	1,684	4,969	2,642	3,830	3,341	1,011	1,133	2,247	1,040	2,866	26,431
1937.	All ages ..	205	143	381	1,492	594	1,038	832	846	258	580	189	933	7,491
Birmingham.														
1921–30.	45–65	182	117	316	513	248	315	342	287	92	81	60	441	2,994
	65 and over ..	106	65	191	396	242	352	306	143	98	163	70	235	2,367
1937.	All ages ..	39	25	60	151	59	103	111	136	25	60	12	106	887
Bristol.														
1921–30.	45–65	78	40	71	269	96	118	96	71	30	35	16	124	1,044
	65 and over ..	69	20	60	226	115	148	133	37	42	79	31	107	1,067
1937.	All ages ..	8	9	15	56	32	36	35	39	10	25	6	37	308
Stoke-on-Trent.														
1921–30.	45–65	61	28	74	213	75	70	78	58	13	20	10	124	824
	65 and over ..	40	22	41	118	53	67	63	23	11	23	18	55	534
1937.	All ages ..	7	14	7	59	17	21	18	22	7	5	7	16	200
Remainder of Midland I Region.														
1921–30.	45–65	411	278	566	1,574	744	828	927	462	214	232	172	1,096	7,504
	65 and over ..	287	177	512	1,515	838	1,169	1,137	265	258	566	367	926	8,017
1937.	All ages ..	77	63	104	501	170	313	284	241	92	128	60	262	2,295

† Intestine excluding rectum, but including intestine undefined.
§ Mouth, tonsil, palate, cheek (internal), salivary glands, gums.
‡ Liver, gall bladder and ducts, pancreas.
‡‡ Skin, rodent ulcer, scrotum, penis.
‖ Skin, rodent ulcer, vulva, vagina.
ø Pleura included.
¶ Bladder, urethra, ureter.

Table XCVIII.—*continued.*

FEMALES.

	Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.ø	Bladder.¶	Uterus.	Ovary F.T.	Breast.	Skin, Vagina, &c.‖	Other Sites.	ALL SITES.
London A.C.													
Deaths.													
1921–30. 45–65	237	2,112	1,238	1,652	974	374	211	3,043	878	3,519	263	1,252	15,75[illegible]
65 and over ..	248	2,641	1,742	2,524	1,261	220	354	1,529	386	2,585	473	1,142	15,100
1937. All ages ..	57	561	261	549	279	166	76	447	171	761	85	306	3,71[illegible]
Per cent. of all sites :—													
1921–30. 45–65	1·50	13·41	7·86	10·49	6·18	2·37	1·34	19·32	5·57	22·34	1·67	7·95	100·00
65 and over ..	1·64	17·48	11·54	16·71	8·35	1·46	2·34	10·12	2·56	17·11	3·13	7·56	100·00
1937. All ages ..	1·53	15·08	7·02	14·76	7·50	4·46	2·04	12·02	4·60	20·46	2·29	8·24	100·00
Portsmouth.													
1921–30. 45–65	15	72	59	94	47	12	14	183	38	175	8	58	77[illegible]
65 and over ..	18	122	93	135	58	5	9	95	24	128	40	58	78[illegible]
1937. All ages ..	4	21	31	26	12	3	—	40	10	44	7	16	21[illegible]
Remainder of South-East Region.													
1921–30. 45–65	421	3,178	2,120	2,862	1,570	530	319	4,570	1,336	6,417	455	2,154	25,93[illegible]
65 and over ..	521	5,026	3,786	5,796	2,406	336	511	2,834	691	5,110	1,128	2,212	30,357
1937. All ages ..	168	1,231	648	1,353	573	276	110	1,022	479	1,930	208	604	8,602
Birmingham.													
1921–30. 45–65	35	389	281	308	183	79	32	576	130	706	51	241	3,011
65 and over ..	32	425	371	474	233	48	54	288	49	441	76	179	2,670
1937. All ages ..	14	122	50	124	64	43	11	106	27	180	21	52	814
Bristol.													
1921–30. 45–65	35	149	108	129	69	35	13	234	58	325	31	85	1,271
65 and over ..	24	249	154	233	100	15	25	134	31	250	38	99	1,352
1937. All ages ..	4	46	26	57	26	15	2	67	17	67	8	28	363
Stoke-on-Trent.													
1921–30. 45–65	14	147	74	86	43	17	8	191	33	132	20	52	817
65 and over ..	7	130	72	85	39	4	7	69	9	73	27	44	566
1937. All ages ..	2	51	6	27	14	5	2	25	10	31	5	14	192
Remainder of Midland I Region.													
1921–30. 45–65	151	1,065	823	923	509	179	91	1,453	369	1,862	136	671	8,232
65 and over ..	119	1,584	1,259	1,549	706	75	147	885	182	1,473	379	663	9,021
1937. All ages ..	41	358	198	413	153	62	28	279	116	456	62	167	2,333

Table XCVIII.—*continued.*

MALES.

		Tongue.	Mouth, Tonsils, &c.§	Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.	Bladder.	Prostate.	Skin, Scrotum, &c.‡‡	Other Sites.	ALL SITES.
Kingston-upon-Hull.														
1921–30.	45–65	57	23	70	236	78	109	56	56	17	24	29	128	883
	65 and over ..	46	21	56	188	78	113	57	25	23	43	39	83	772
1937.	All ages ..	7	4	8	56	27	34	20	38	10	11	5	24	244
Leicester.														
1921–30.	45–65	43	25	56	133	64	77	67	44	24	15	10	98	656
	65 and over ..	25	14	52	138	77	103	120	34	32	60	11	69	735
1937.	All ages ..	3	2	14	25	14	23	10	15	8	13	9	15	151
Nottingham.														
1921–30.	45–65	38	21	59	177	72	93	81	114	26	20	11	118	830
	65 and over ..	39	18	41	148	78	110	105	46	28	52	43	84	792
1937.	All ages ..	6	4	11	51	16	32	24	39	3	3	7	19	215
Bradford.														
1921–30.	45–65	57	35	56	254	78	112	92	75	17	26	24	133	959
	65 and over ..	38	27	49	179	94	110	100	32	22	39	37	90	817
1937.	All ages ..	7	8	16	47	32	21	30	26	9	12	9	40	257
Leeds.														
1921–30.	45–65	79	42	92	296	149	207	146	151	49	46	37	222	1,516
	65 and over ..	49	36	64	244	132	208	134	59	42	93	30	114	1,205
1937.	All ages ..	9	3	19	65	26	51	47	86	17	23	5	36	387
Sheffield.														
1921–30.	45–65	107	105	131	379	155	170	140	201	26	34	51	296	1,795
	65 and over ..	49	77	89	255	146	200	109	78	37	84	43	166	1,333
1937.	All ages ..	9	15	14	96	38	54	38	61	15	17	6	50	413
Liverpool.														
1921–30.	45–65	228	123	230	700	208	226	234	219	59	57	52	353	2,689
	65 and over ..	136	76	131	429	161	238	188	105	52	78	79	182	1,855
1937.	All ages ..	26	22	48	161	47	83	64	119	16	27	13	58	684
Manchester.														
1921–30.	45–65	192	113	291	679	202	294	216	337	79	58	95	464	3,020
	65 and over ..	106	82	183	396	149	255	182	138	60	108	87	219	1,965
1937.	All ages ..	30	23	43	124	44	64	56	135	19	27	21	59	645

Table XCVIII.—*continued.*

FEMALES.

		Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.	Bladder.	Uterus.	Ovary F.T.	Breast.	Skin Vagina, &c.‖	Other Sites.	ALL SITES.
Kingston-upon-Hull.														
1921–30.	45–65	33	152	82	108	48	25	10	287	17	174	26	71	1,033
	65 and over ..	9	161	100	148	42	8	12	101	12	117	36	61	807
1937.	All ages ..	2	42	21	22	13	8	5	35	12	25	8	29	222
Leicester.														
1921–30.	45–65	11	116	61	108	47	16	9	164	43	214	13	72	874
	65 and over ..	12	140	97	144	72	7	13	100	15	133	39	56	828
1937.	All ages ..	3	25	19	37	16	5	5	23	15	60	5	13	226
Nottingham.														
1921–30.	45·65	8	90	85	105	59	15	8	236	39	220	16	84	965
	65 and over ..	12	115	96	145	62	14	9	96	14	142	35	66	806
1937.	All ages ..	1	40	14	33	18	9	2	35	14	39	7	10	222
Bradford.														
1921–30.	45–65	27	157	86	125	74	26	11	267	48	264	33	81	1,199
	65 and over ..	24	254	126	150	65	7	13	131	22	139	41	79	1,051
1937.	All ages ..	9	43	20	40	22	9	4	38	21	72	7	19	304
Leeds.														
1921–30.	45–65	20	188	156	193	96	48	28	375	68	352	34	128	1,686
	65 and over ..	18	220	198	253	114	12	12	169	17	189	48	115	1,365
1937.	All ages ..	12	59	29	66	27	9	8	64	14	77	9	23	397
Sheffield.														
1921–30.	45–65	33	249	143	161	75	45	14	343	57	354	35	123	1,632
	65 and over ..	22	219	172	224	79	27	17	154	34	180	59	83	1,270
1937.	All ages ..	6	61	26	63	27	13	5	40	12	84	8	40	385
Liverpool.														
1921–30.	45–65	54	495	228	252	163	49	29	531	74	461	50	169	2,555
	65 and over ..	39	440	218	311	128	32	27	214	29	292	79	123	1,932
1937.	All ages ..	15	130	55	102	39	31	8	78	26	111	17	37	649
Manchester.														
1921–30.	45–65	51	451	193	301	146	72	20	555	101	537	58	197	2,682
	65 and over ..	44	484	216	328	113	24	41	216	29	276	94	158	2,023
1937.	All ages ..	16	102	55	103	42	19	13	80	26	124	16	43	639

Table XCVIII.—*continued.*

MALES.

	Tongue.	Mouth, Tonsils, &c.§	Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.	Bladder.	Prostate.	Skin, Scrotum, &c.‡‡	Other Sites.	ALL SITES.
Remainder of North IV.													
1921–30. 45–65	868	547	945	3,611	1,322	1,520	1,235	868	328	321	506	1,925	13,996
65 and over ..	542	375	665	2,576	1,211	1,636	1,032	453	361	572	607	1,242	11,272
1937. All ages ..	133	99	188	849	275	553	333	414	106	169	124	383	3,626
North I Region.													
1921–30. 45–65	371	154	367	1,579	548	661	492	270	125	128	162	836	5,693
65 and over ..	258	117	240	1,260	521	744	504	152	133	319	274	494	5,016
1937. All ages ..	52	39	90	420	122	243	164	128	41	77	48	182	1,606
Wales II Region.													
1921–30. 45–65	75	43	118	754	164	237	203	74	35	44	36	283	2,066
65 and over ..	73	49	119	846	228	400	231	56	65	161	138	321	2,687
1937. All ages ..	11	14	32	185	38	92	64	36	10	33	19	62	596
South-West Region.													
1921–30. 45–65	281	151	367	1,236	519	568	539	289	121	178	137	844	5,230
65 and over ..	286	173	349	1,674	749	989	844	242	242	618	409	906	7,481
1937. All ages ..	42	27	95	408	132	258	194	154	47	151	53	206	1,767
Remainder of England and Wales.													
1921–30. 45–65	1,164	600	1,398	5,554	2,211	2,591	2,389	1,231	601	634	603	2,848	21,824
65 and over ..	899	544	1,154	5,459	2,665	3,714	2,829	817	779	1,632	1,240	2,652	24,384
1937. All ages	181	171	299	1,567	538	986	809	532	182	396	227	695	6,603
England and Wales, excluding London A.C.													
1921–30. 45–65	5,316	3,150	7,099	22,811	8,956	10,590	9,700	6,450	2,485	2,631	2,413	13,641	95,242
65 and over ..	4,113	2,550	5,725	21,148	10,246	14,483	11,505	3,740	3,442	6,989	4,589	10,897	99,427
1937. All ages	861	694	1,452	6,355	2,235	4,020	3,156	3,106	881	1,776	825	3,227	28,588

Table XCVIII.—*continued.*

FEMALES.

	Œsophagus.	Stomach.	Liver, Pancreas, &c.‡	Intestine.†	Rectum, Anus.	Lung, Larynx.	Bladder.	Uterus.	Ovary F.T.	Breast.	Skin, Vagina. ‖	Other Sites.	ALL SITES.
Remainder of North IV.													
1921–30. 45–65	312	2,590	1,521	1,807	739	306	139	2,889	572	3,321	326	1,149	15,671
65 and over ..	251	2,989	1,721	2,298	743	149	157	1,263	188	1,934	601	908	13,202
1937. All ages	96	762	333	644	209	109	37	517	172	798	109	268	4,054
North I Region.													
1921–30. 45–65	127	1,147	614	731	280	84	58	1,459	203	1,077	113	440	6,333
65 and over ..	85	1,224	679	924	305	47	43	556	62	649	209	308	5,091
1937. All ages	23	326	120	259	94	31	10	275	55	233	43	100	1,569
Wales II Region.													
1921–30. 45–65	147	608	199	283	110	71	13	368	108	459	43	259	2,668
65 and over ..	85	936	325	512	164	33	21	198	50	393	113	226	3,056
1937. All ages ..	27	198	58	109	32	15	6	55	35	97	22	54	708
South-West Region.													
1921–30. 45–65	177	1,005	626	738	383	149	62	1,310	359	1,584	132	610	7,135
65 and over ..	179	1,769	1,148	1,544	587	104	147	887	162	1,404	421	696	9,048
1937. All ages	59	361	150	313	111	53	30	267	104	422	69	151	2,090
Remainder of England and Wales.													
1921–30. 45·65	629	3,956	2,472	2,838	1,351	565	171	5,084	1,034	5,397	551	2,086	26,134
65 and over ..	506	5,411	3,577	4,585	1,738	271	337	2,682	388	3,823	1,129	1,898	26,345
1937. All ages	157	1,209	586	1,130	403	187	97	968	351	1,311	227	474	7,100
England and Wales, excluding London A.C.													
1921–30. 45–65	2,300	16,204	9,931	12,152	5,992	2,323	1,049	21,075	4,687	24,031	2,131	8,730	110,605
65 and over ..	2,007	21,898	14,408	19,838	7,754	1,218	1,602	11,072	2,008	17,146	4,592	8,032	111,575
1937. All ages ..	659	5,187	2,445	4,921	1,895	902	383	4,014	1,516	6,161	858	2,142	31,083

Variations in diagnosis or effectiveness of treatment can hardly explain the London male excess for cancer of the tongue, mouth and œsophagus and it must be concluded that these forms of cancer have an excessive incidence amongst males resident in London, though females do not show any corresponding excess for œsophageal cancer. London's excess for cancer of the rectum amongst females but not males is also difficult of explanation by differences in diagnosis. With regard to the prostate the counties around London, comprising the remainder of the South East and Portsmouth, in Table XCVIII, recorded rates even higher than in London (by 27 per cent. in the combined area) and a climatic factor is probably involved. For the bladder, expecially amongst females, London has very high cancer rates, whether compared with the country as a whole, the South-East

or South-West counties or other large towns, as is evident from the following mean annual rates in 1921–30 :—

Cancer of bladder; rates per million, 1921–30.

	Males.		Females.	
	45—	*65 and over*	*45—*	*65 and over*
England and Wales ..	78	364	30	133
London A.C. ..	109	492	42	204
South East, except London A.C. ..	80	459	36	146
South West ..	59	311	25	134
Manchester	110	380	25	180
Liverpool	79	299	35	111

For every town in Table XCVIII (except Leicester for males), the death rates in 1921–30 from this form of cancer were below those of London for each sex, and this was also true in 1937 for most of the towns. The South-East in general records excess of bladder cancer compared with the other regions in the table, and for this there may be a climatic cause, the still higher rates in London being perhaps due to greater facilities for cystoscopic diagnosis.

With regard to the larynx and lung the separate male death rates from cancer of these sites in 1921–30 were as follows, the 13 towns being arranged in descending order of the mortality ascribed to lung cancer at ages 45–65.

Mean annual death rates per million males, 1921–30.

	Cancer of lung (and pleura).		Cancer of larynx (and trachea).	
	45—	*65 and over*	*45—*	*65 and over*
Leeds	225	246	95	255
Sheffield	215	217	174	460
Nottingham	204	176	243	447
Manchester	203	279	265	596
London A.C. ..	197	218	182	439
Birmingham ..	164	239	158	430
Liverpool	126	109	167	494
Bradford	112	104	128	312
Kingston-upon-Hull..	87	69	116	277
Stoke-on-Trent ..	70	78	170	369
Bristol	66	94	128	255
Leicester	59	135	126	374
Portsmouth ..	53	105	133	254
Rest of England and Wales	73	107	97	242
All England and Wales	97	126	116	282
Average of first 6 towns	*201*	*229*	*186*	*438*
Average of last 6 towns	*75*	*98*	*134*	*307*

The first 6 towns of the sequence, which recorded high rates, exceeding 160 per million, for lung cancer at each age are for the most part large hospital centres and this suggests at first sight that their high rates merely reflect a more complete radiographic diagnosis of lung cancer in the resident populations of those towns. That this could only be a partial explanation, however, is shown by the fact that laryngeal cancer, which is not specially difficult of diagnosis, tends to show a parallel variation with lung cancer (Leeds being exceptional in 1921–30*), and moreover Liverpool returned only average rates for lung cancer and Bristol low rates although they are large hospital centres. Whereas 12 out of 13 of the largest towns had rates for laryngeal cancer above the rest of England and Wales at both ages, this was only true of 7 of the towns for lung cancer, another fact incompatible with the view that the variations in lung cancer mortality are mere indices of diagnosis.

Considering mortality from cancer of the lungs and larynx in combination, the comparative indices in 9 subdivisions of England and Wales in 1921–30 and 1937 were as follows:—

	Cancer of lung, larynx, pleura, trachea. *Rates per million.*		*Proportionate mortality (per cent. of all sites)*			
	Males		Males		Females	
	1921–30 *45—*	1921–30 *65 up*	1921–30 *45 up*	1937 *All ages*	1921–30 *45 up*	1937 *All ages*
London A.C. ..	379	657	8·4	18·6	1·9	4·5
12 other large towns ..	314	576	7·5	16·0	1·9	3·7
Rest of South-East ..	209	412	5·5	11·3	1·5	3·2
Rest of North IV ..	191	403	5·2	11·4	1·6	2·7
Rest of Midland I ..	172	312	4·7	10·5	1·5	2·7
South-West	141	311	4·2	8·7	1·6	2·5
North I	129	276	3·9	8·0	1·1	2·0
Rest of England, and Wales I	145	318	4·4	8·4	1·6	2·6
Wales II	103	216	2·7	6·0	1·8	2·1

The four indices for males show consistently that amongst these areas (1) London has the highest rate for cancer of the respiratory organs, (2) the aggregate rate for the 12 next largest towns is about 10 or 15 per cent. lower than London, (3) the residual areas of the South-East and of North IV come next in order with rates about 40 per cent. below London, followed by the residual area of Midland I, (4) the regions of North I and Wales II have the lowest rates. The increase in proportionate mortality between 1921–30 and 1937 was almost the same in each division, the rate being doubled in the interval. For females, although in 1921–30 there was no pronounced

*In 1921–30 Leeds male mortality from cancer of larynx and lung combined at ages 45 and over was 81 per cent. of that of London.

regional variation in mortality, the 1937 rates show contrasts very similar to those for males.

The site distribution of cancer in each of the large towns, as deduced from Table XCVIII, may now be briefly considered by noting the sites for which in 1921–30 the rates were significantly different from those of London (using as an approximate criterion of significance an excess or defect of registered deaths, from the calculated number at the London rate, amounting to as much as 3 times the square root of the calculated number). The comparison is made (*a*) on the basis of proportionate mortality, the calculated deaths being in this case the number expected if the total cancer deaths in the town at the specified ages had been distributed by site in the same way as in London, and (*b*) on the basis of death-rates, the calculated deaths being in this case the number expected if the population at the specified ages had been subject to the London death-rate for the site in question, taking no account of the incidence of cancer of any other site.

Birmingham.—On a proportionate and death-rate basis there was significant excess for intestines and rectum amongst males and for liver and pancreas amongst females. On a proportionate basis there was significant deficiency for stomach amongst males and for ovarian cancer.

Bradford.—On a proportionate basis there was significant excess for stomach and skin cancer amongst males and for stomach (aged 65 and over) and uterus amongst females, and significant deficiency for œsophagus, bladder, prostate and respiratory organs amongst males and for breast (aged 65 and over) amongst females. On a death rate basis the excess was significant for stomach (65 and over), uterus and skin amongst females and almost significant for the skin amongst males and œsophagus amongst females.

Bristol.—On a proportionate, though not on a death-rate, basis there was significant excess of stomach cancer amongst males and for the œsophagus (ages 45–65) amongst females, and on a proportionate basis there was significant deficiency for the œsophagus and respiratory organs amongst males.

Kingston-upon-Hull.—On a proportionate basis there was significant excess for skin cancer in both sexes, for stomach and intestines amongst males and for œsophagus (ages 45–65) and uterus amongst females, and a significant deficiency for rectum in both sexes, for respiratory organs amongst males and for breast amongst females. On a death-rate basis the excess was significant for skin and stomach in both sexes and for œsophagus (ages 45–65) and uterus amongst females.

Leeds.—Both on a proportionate and death-rate basis there was significant excess for the intestines amongst males and for uterus,

liver and pancreas amongst females. On a proportionate basis there was significant deficiency for œsophagus amongst males and for bladder (aged 65 and over) and ovary amongst females and an almost significant deficiency for the breast amongst females.

Leicester.—On a proportionate, though not on a death-rate, basis there was significant excess for rectum and significant deficiency for respiratory organs amongst males.

Liverpool.—Both on a proportionate and death-rate basis there was significant excess for stomach cancer in both sexes and for tongue, mouth and skin amongst males. On a proportionate basis there was significant deficiency for œsophagus, lung and prostate amongst males and for ovary and breast amongst females.

Manchester.—On a proportionate basis there was significant excess for skin cancer in both sexes and for stomach amongst females, and significant deficiency for the rectum in both sexes, for prostate, liver and pancreas amongst males and for ovary and breast amongst females. On a death-rate basis the excess was significant for stomach and skin in both sexes, for tongue, mouth, œsophagus, intestines and respiratory organs amongst males, and for the uterus.

Nottingham.—On a proportionate, though not on a death-rate basis, there was significant excess for uterine cancer, and an almost significant excess for skin cancer (65 and over) in both sexes. There was significant deficiency for œsophagus amongst males and stomach amongst females and an almost significant deficiency for ovarian cancer.

Portsmouth.—On a proportionate, though not on a death-rate, basis there was significant excess for tongue cancer (ages 45–65) amongst males and for uterus and skin (65 and over) amongst females, and on a proportionate basis significant deficiency for respiratory organs amongst males and stomach amongst females.

Sheffield.—On a proportionate and death-rate basis there was significant excess for skin cancer in both sexes and for mouth amongst males and an almost significant excess for the uterus. On a proportionate basis there was significant deficiency for the rectum in both sexes, for œsophagus, bladder (almost significant in females also) and prostate amongst males, and for the ovary.

Stoke-on-Trent.—Both on a proportionate and death rate basis there was significant excess for stomach cancer in both sexes and for the uterus, and an almost significant excess for the skin and vagina amongst females. On a proportionate basis there was significant deficiency for bladder, prostate and respiratory organs amongst males and for the breast amongst females.

In the residual areas of England and Wales the site-distributions can best be compared directly in the form of percentages of all sites

(1) at ages 45–65 in 1921–30 and (2) at all ages in 1937, and these are given in Table D. Wales II, a rural area, is remarkable in having, both in 1921–30 and 1937 for each sex, a very pronounced excess of cancer of the stomach when compared with the other areas. The death-rates for this site, other parts of the digestive system and all other sites in combination in 1921–30 are compared below :—

Cancer of Digestive Organs; mean annual rates per million, 1921–30.

	Ages 45–65.						Ages 65 and over.	
	Stomach.	Œsophagus.	Intestine.	Rectum.	Liver and Pancreas.	Other Sites.	Stomach.	Other Sites.
Males.								
Wales II ..	1,048	164	330	282	228	820	3,259	7,093
North I ..	754	175	316	235	262	977	2,286	6,815
North IV* ..	796	208	335	272	291	1,182	2,289	7,729
South West ..	605	180	278	264	254	979	2,151	7,463
South-East* ..	588	239	304	299	255	1,055	2,024	8,743
Midland I* ..	585	210	308	344	276	1,064	1,786	7,664
Rest of England and Wales*	652	164	304	281	260	902	2,124	7,362
Females.								
Wales II ..	759	184	354	137	249	1,650	2,864	6,486
North I ..	557	62	355	136	298	1,667	2,032	6,419
North IV* ..	505	61	353	144	297	1,698	1,936	6,615
South-West ..	413	73	303	157	257	1,728	1,614	6,643
South-East* ..	354	47	318	175	236	1,756	1,448	7,300
Midland I* ..	373	53	323	178	288	1,668	1,458	6,848
Rest of England and Wales*	455	72	327	156	285	1,714	1,767	6,838

* Excluding the large towns of 250,000 population or over.

In Wales II mortality from stomach cancer was evidently very much higher in both sexes than in any of the other areas and for the œsophagus it was very high amongst females but not males, this being repeated in 1937 (*see* Table XCIX). For the intestines the rates were only slightly above average and similar to those in North IV, whilst for other sites in Table XCIX Wales II showed no important difference from other areas for females and low rates for males. The reason for the great excess of deaths registered as due to cancer of the stomach in both sexes and of the œsophagus in females requires investigation. Comparison of death rates at four age groups in London, the county boroughs, the English county areas and the Welsh counties divided into three groups, made below, shows that (1) at ages between 45 and 75 rates for gastric cancer tend to be higher in town than country in England; (2) in the Welsh counties of Glamorgan, Monmouth, Brecknock and Carmarthen, excluding the county boroughs, the combined rates were slightly above the English county rates for males under 55 and much above for females under 75; (3) in the five northern Welsh counties, Anglesey, Caernarvon, Denbigh, Flint and Merioneth, the combined rates were about double the English county rates at each age for females whilst the excess

ranged from 88 per cent. at 45–55 to 44 per cent. at 75 upwards for males; (4) in the remaining counties of mid and South Wales, Montgomery, Radnor, Cardigan and Pembroke, the rates were

Table XCIX.—Site distributions of Fatal Cancer (per cent. of All cancer deaths) in 7 divisions of England and Wales after excluding London and towns of 250,000 population or over, at ages 45-65 in 1921-30 and at all ages in 1937.

	Wales II.	Rest of North IV.	Rest of Midland I.	Rest of South-East.	North I.	South-West.	Rest of England & Wales.	Aggregate of these areas.
Males, 1921–30, Ages 45–65.								
Tongue	3·6	6·2	5·5	4·6	6·5	5·4	5·3	5·3
Mouth, tonsil, etc.	2·1	3·9	3·7	3·3	2·7	2·9	2·7	3·2
Œsophagus ..	5·7	6·8	7·5	8·7	6·4	7·0	6·4	7·2
Stomach	36·5	25·8	21·0	21·5	27·7	23·6	25·4	24·3
Liver, pancreas ..	7·9	9·4	9·9	9·3	9·6	9·9	10·1	9·7
Intestine (except rectum) ..	11·5	10·9	11·0	11·1	11·6	10·9	11·9	11·3
Rectum, anus ..	9·8	8·8	12·4	10·9	8·6	10·3	10·9	10·4
Larynx, lung ..	3·6	6·2	6·2	7·6	4·7	5·5	5·6	6·2
Bladder	1·7	2·3	2·9	2·9	2·2	2·3	2·8	2·6
Prostate	2·1	2·3	3·1	3·2	2·2	3·4	2·9	2·8
Skin, scrotum, etc.	1·7	3·6	2·3	1·8	2·8	2·6	2·8	2·6
Other sites ..	13·8	13·8	14·5	15·1	15·0	16·2	13·2	14·4
Males, 1937, All ages.								
Tongue	1·8	3·7	3·4	2·7	3·2	2·4	2·7	2·9
Mouth, tonsil, etc.	2·3	2·7	2·7	1·9	2·4	1·5	2·6	2·3
Œsophagus ..	5·4	5·2	4·5	5·1	5·6	5·4	4·5	5·0
Stomach	31·0	23·4	21·8	19·9	26·2	23·1	23·7	22·6
Liver, pancreas ..	6·4	7·6	7·4	7·9	7·6	7·5	8·1	7·8
Intestine (except rectum) ..	15·4	15·3	13·6	13·9	15·1	14·6	14·9	14·5
Rectum, anus ..	10·7	9·2	12·4	11·1	10·2	11·0	12·3	11·2
Larynx, lung ..	6·0	11·4	10·5	11·3	8·0	8·7	8·4	9·9
Bladder	1·7	2·9	4·0	3·4	2·6	2·7	2·8	3·1
Prostate	5·5	4·7	5·6	7·7	4·8	8·5	6·0	6·4
Skin, scrotum, etc.	3·2	3·4	2·6	2·5	3·0	3·0	3·4	3·0
Other sites ..	10·6	10·5	11·5	12·6	11·3	11·6	10·6	11·3
Females, 1921–30, Ages 45–65.								
Œsophagus ..	5·5	2·0	1·8	1·6	2·0	2·5	2·4	2·1
Stomach	22·8	16·5	12·9	12·3	18·1	14·1	15·1	14·7
Liver, pancreas ..	7·5	9·7	10·0	8·2	9·7	8·8	9·5	9·1
Intestine (except rectum) ..	10·6	11·5	11·2	11·0	11·5	10·3	10·9	11·1
Rectum, anus ..	4·1	4·7	6·2	6·1	4·4	5·4	5·2	5·4
Larynx, lung ..	2·7	2·0	2·2	2·0	1·3	2·1	2·2	2·0
Bladder	0·5	0·9	1·1	1·2	0·9	0·9	0·7	0·9
Uterus	13·8	18·4	17·6	17·6	23·0	18·4	19·4	18·6
Ovary, Fallopian tubes	4·0	3·7	4·5	5·2	3·2	5·0	4·0	4·3
Breast	17·2	21·2	22·6	24·7	17·0	22·2	20·7	21·8
Skin, vagina, etc.	1·6	2·1	1·7	1·8	1·8	1·8	2·1	1·9
Other sites ..	9·7	7·3	8·2	8·3	7·1	8·5	7·8	8·1
Females, 1937, All ages.								
Œsophagus ..	3·8	2·4	1·8	2·0	1·5	2·8	2·2	2·2
Stomach	28·0	18·8	15·3	14·3	20·8	17·3	17·0	16·8
Liver, pancreas ..	8·2	8·2	8·5	7·5	7·6	7·2	8·3	7·9
Intestine (except rectum) ..	15·4	15·9	17·7	15·7	16·5	15·0	15·9	16·0
Rectum, anus ..	4·5	5·2	6·6	6·7	6·0	5·3	5·7	6·0
Larynx, lung ..	2·1	2·7	2·7	3·2	2·0	2·5	2·6	2·8
Bladder	0·8	0·9	1·2	1·3	0·6	1·4	1·4	1·2
Uterus	7·8	12·8	12·0	11·9	17·5	12·8	13·6	12·8
Ovary, Fallopian tubes	4·9	4·2	5·0	5·6	3·5	5·0	4·9	5·0
Breast	13·7	19·7	19·5	22·4	14·8	20·2	18·5	19·8
Skin, vagina, etc.	3·1	2·7	2·7	2·4	2·7	3·3	3·2	2·8
Other sites ..	7·7	6·5	7·0	7·0	6·5	7·2	6·7	6·7

intermediate for the most part between those of Wales I and North Wales.

Cancer of Stomach; mean annual rates per million, 1921–30.

	Males				Females			
	45—	*55—*	*65—*	*75 up*	*45—*	*55—*	*65—*	*75 up*
London A.C. ..	476	1,165	2,070	2,393	271	645	1,374	1,846
County boroughs of England and Wales.. ..	465	1,170	2,180	2,170	283	736	1,570	1,933
English counties (without County boroughs) ..	353	990	1,973	2,375	228	642	1,471	1,989
North Wales (5 counties) ..	659	1,664	3,470	3,414	452	1,295	2,668	4,054
Rest of Wales II	591	1,415	2,824	3,062	364	984	1,982	3,324
Wales I (without County boroughs)	453	1,182	1,960	2,147	356	1,066	1,907	1,951

It is evident that variations in diagnosis or accuracy of death registration cannot be invoked to account for the remarkable excess of gastric cancer in North Wales, and it must be presumed that the explanation lies either in a special racial susceptibility to this form of cancer (the proportion of residents of Welsh extraction being highest in the North), or else in dietary habits which might also account for the excess of œsophageal cancer amongst females.

The other areas in Table XCIX which show an excess of gastric cancer, although less pronounced than in Wales II, are North I and North IV, where the rates are not high for the female œsophagus. Midland I gave the highest rates for rectal cancer in both sexes, a peculiarity repeated in 1937.

Another important fact revealed by Table XCIX is the large excess of uterine cancer in North I, coupled with low mortality for the breast and ovary, this being evident both in 1921–30 and 1937.

Cancer of uterus, breast, etc; mean annual rates per million females, 1921-30

	Ages 45–65.				Ages 65 and over.			
	Uterus.	*Ovary, etc.*	*Breast.*	*Other Sites.*	*Uterus.*	*Ovary, etc.*	*Breast.*	*Other Sites.*
North I ..	708	99	523	1,744	923	103	1,077	6,348
North IV* ..	564	112	648	1,734	818	122	1,253	6,358
South-West ..	538	148	651	1,595	810	148	1,281	6,019
Midland I* ..	509	129	652	1,593	815	168	1,356	5,967
South-East* ..	508	149	714	1,514	817	199	1,473	6,260
Wales II ..	460	135	573	2,165	606	153	1,202	7,389
Rest of England and Wales*..	585	119	621	1,683	876	127	1,249	6,353

* Excluding the large towns of 250,000 population or over.

At both ages North I gave the highest rate for cancer of the uterus and lowest rates for the breast and ovary. The excess was most pronounced at ages 45–65. The South East, on the other hand,

with the lowest rate for uterine cancer at 45–65 and one of the lowest at 65 and over, (ignoring Wales II, which is abnormal owing to its great excess of gastric cancer) returned much the highest mortality for breast and ovary at both ages. The 6 areas, apart from Wales II, arranged in descending order of their uterine cancer mortalities at 45–65 are North I, Rest of England and Wales, North IV, South West, Midland I, South East, and when arranged in ascending order of the combined breast and ovary mortalities the order is North I, Rest of England and Wales, North IV, Midland I, South West, South East, a very close agreement. There is also in these 6 areas a considerable measure of agreement between the sequence of rates from uterine cancer at 45–65 and from stomach cancer at the same ages amongst females, the descending order of ranking for the latter being North I, North IV, Rest of England and Wales, South West, Midland I, and South East.

Although a less definite positive association between death rates of females from cancer of the uterus and stomach is found in the 13 large towns they show a pronounced negative association between the death rates for uterus or stomach at 45–65 on the one hand and the combined rates for the breast and ovary at either age group on the other, as shown below where the towns are arranged in descending order of the combined uterine and gastric rate at ages 45–65.

Cancer of uterus and stomach; mean annual rates per million females 1921-30.

	Ages 45–65.			Ages 45–65.			Ages 65 and over.		
	Uterus.	*Stomach.*	*Combined rate.*	*Breast.*	*Ovary, etc.*	*Combined rate.*	*Breast.*	*Ovary, etc.*	*Combined rate.*
Kingston-upon-Hull	1,000	529	1,529	606	59	665	1,274	131	1,405
Stoke-on-Trent ..	753	580	1,333	520	130	650	1,081	133	1,214
Liverpool ..	649	605	1,254	563	90	653	1,201	119	1,320
Manchester	687	558	1,245	665	125	790	1,210	127	1,337
Bradford ..	721	424	1,145	713	130	843	1,189	188	1,377
Sheffield ..	654	475	1,129	675	109	784	1,196	226	1,422
Nottingham	790	301	1,091	736	130	866	1,395	138	1,533
Leeds ..	709	356	1,065	666	129	795	1,205	108	1,313
London ..	609	422	1,031	704	176	880	1,487	222	1,709
Leicester ..	600	424	1,024	783	157	940	1,470	166	1,636
Birmingham	590	398	988	723	133	856	1,481	165	1,646
Portsmouth	690	271	961	660	143	803	1,285	241	1,526
Bristol ..	543	346	889	754	135	889	1,549	192	1,741

The first 4 towns, with combined mortalities for uterus and stomach exceeding 1,240 per million at 45–65, all returned breast and ovary rates below 800 at that age and below 1,410 at 65 upwards, whereas the last 5 towns, with uterus and stomach rates below 1,040 per million, all gave breast and ovary rates above 800 at 45–65 and above 1,525 at 65 upwards. The inverse association with uterine

and gastric cancer mortality in early life is more pronounced for the breast and ovary mortality after age 65 than before that age. A possible explanation for these facts would be that in places where the social environment is so unfavourable as to be productive of excessive gastric and uterine cancer in early life the women affected are chiefly those with a general susceptibility to cancer who would probably if less exposed to external irritant factors develop cancer of the breast or ovary in later life.

The exceptionally high rates for uterine cancer in North I (708 per million at 45–65) and in Kingston-upon-Hull (1,000) are part of a general excess in the North-eastern counties of England, the rates at this age being as follows, compared with 577 per million in England and Wales as a whole :—

Northumberland and Durham	708
Yorkshire, North Riding	597
Yorkshire, East Riding	795
Lincolnshire, Lindsey division	706

Other facts indicated by Table XCIX are that cancer of the tongue and mouth in males tends to produce a higher proportionate mortality in the northern industrial regions than elsewhere, whilst cancer of the bladder and prostate tend to have lowest rates in the North and North-West, the highest mortality recorded for the prostate being in the south as already stated. Cancer of the rectum for males gives highest proportionate rates in Midland I and lowest rates in the North, and for females highest rates in Midland I and the South East and lowest rates in Wales II.

Medical Certification.

Information bearing upon the extent to which death registration and burial take place on the strength of the certificate of a medical attendant who has actually seen the body after death has appeared under the above title in each text portion of the Statistical Review since 1928 inclusive. For a full statement of the aspects of certification affecting this matter, reference should be made to the 1928 Review when the records were examined in some detail, or to the quinquennial repetition of the full enquiry made in 1933. According to present intention the next complete analysis will fall due in 1938, the intermediate years' records being limited to a simple summary of the cases in which the body was or was not seen after death without reference to date or place of death or to the time which had elapsed since the deceased was last seen by a medical attendant.

The appropriate summary of the deaths registered in 1937 is shown in the following table :—

Summary of Certification of Deaths registered during the Year 1937.

—	Registered Medical Practitioner.	Inquest or Coroner's P.M. without Inquest.	Other Cases reviewed by Coroner.	Total Deaths Registered.	
				Number.	Percentage.
(1)	(2)	(3)	(4)	(5)	(6)
Seen after death ..	234,500	44,399	5,214	284,113	55·8
Not seen after death	225,461	—	—	225,461	44·2
	459,961	44,399	5,214	509,574	100·0

NOTE—(1) All deaths subject to inquest or post-mortem by coroner are shown in column 3; of all other deaths, those certified by a registered medical practitioner are shown in column 2 (whether they were referred to a coroner or not), and those not certified by a registered medical practitioner (which are automatically referred to a coroner) are shown in column 4.

(2) Cases in which no statement was forthcoming as to whether they were or were not seen after death have been included with the " not seens " if they were not referred to a coroner. They amounted to 1·6 per 1,000 of the total deaths registered in 1937.

The above statement shows that in 1937 the proportion of " seen " cases was 55·8 per cent. of the total deaths registered, the position in this respect having improved more or less continuously from the figure of 51·0 per cent. recorded in 1928.

Of the apparently large numbers returned as " not seen," the vast majority of the deceased persons were, of course, seen alive by the medical attendant on the day of death or within a very short period before death. From the full examination made in 1933 it was shown that if the numbers seen within one day of death were added to those seen after death, as conforming to a standard which satisfies reasonable requirements, they would embrace 93·1 per cent. of the total deaths, while if those seen within two days of death were added the proportion would be increased to 96·6 per cent., both percentages showing an advance over the corresponding 1928 figures.

POPULATION.

The total population of England and Wales as at the 30th June, 1937, has been estimated at 41,031,000 persons, 19,705,000 being males and 21,326,000 females.

The current year's total is 192,000 in excess of the corresponding mid-1936 estimate and represents an estimated rate of growth of 0·47 per cent. per annum during the past year, a figure which may be compared with the 10-year increases of 5·53 per cent. and 4·93 per cent. recorded in respect of the decennia 1921–31 and 1911–21 respectively. (*See* Census, 1931, General Tables, Table I.)

The method adopted in arriving at the current estimates is that which has been used with apparent success in past periods and consists of taking the 1931 Census as a starting point, adding the births and immigrants and deducting deaths and emigrants between the date of the Census and the 30th June, 1937. Of the elements entering into the computation, the records of births and deaths are believed to be precise and complete, so that such estimation error as may be inherent in the final result may be regarded as attaching almost wholly to the allowances included in respect of migration. For the latter, recourse is had to the statistics of migration periodically compiled by the Board of Trade and to departmental records of the movements of the Defence Forces; these are incomplete however, in that they afford no guide to the passenger traffic between the several countries of the United Kingdom nor to the possible effect on the home population of changes in the personnel of the mercantile marine, the allowance for which is a matter of judgment based upon past experience qualified as may seem to be required by current conditions. The error to which the population estimates are subject is one which may be expected to grow in degree as the preceding census becomes more remote.

The mid-1937 population estimate of 41,031,000 is some 1,079,000 in excess of the 1931 census figure, of which excess about 703,000 may be assigned to natural increase, leaving 376,000 to be ascribed to the miscellaneous movements summed up in the term migration. It is of interest to observe (from Part II of the Statistical Review Table S) that the net balance of migration which for several decades has, on the whole, been consistently outward in character, appears since about 1930, to have shown a definite inward tendency, thus affording some numerical compensation for the lowness of the level to which the numbers of births have fallen.

The net passenger movement into the United Kingdom was 56,119 in 1937.

Age Distribution.—The estimated sex-age distribution of the national population, shown in Table 1 of Part I of the Tables section of this volume, has been obtained from the corresponding 1936 distribution by the survivorship method customarily adopted for the purpose; this briefly consists of (1) obtaining the year's deaths arising from the population at each age in 1936, and treating the survivors as the population at the next higher age in 1937, (2) completing the table by the addition of the population aged 0–1, represented by the survivors at the middle of 1937 of the births occurring between the middle of 1936 and the

middle of 1937, and (3) adjusting the results of these two operations in respect of the balance of population movement in accordance with such age statistics as are available in respect thereof.

The average ages of the mid-1937 population according to the estimated age distribution are 33·1 and 35·0 years for males and females respectively, figures which compare with averages of 31·8 and 33·5 in 1931 or 29·9 and 31·2 in 1921.

The main features of the age-distribution of the population are the proportional reduction in the number of young children aged 0–5 (from 11·4 per cent. in 1901 to 6·8 per cent. in 1937) and in children of school age 5–15 (from 21·0 per cent. to 15·0 per cent.) ; the increase in old and elderly people (*e.g.* at 65–75, from 3·3 to 6·1 per cent. and at 75–85, from 1·2 to 2·1 per cent.) ; and the substantial constancy in the numbers of those aged 25–35 (16·2 per cent. in 1901, 16·6 per cent. in 1937).

Local Populations.—The 1937 estimates of the populations of all boroughs, urban districts and rural districts in England and Wales are shown in Table 17 of Part I and Table E of Part II of the current Statistical Review; the figures in respect of areas which have been subject to boundary changes during the year are further amplified in the Appendix to Part II where the changes are set out in detail.

As for the country as a whole, so for each of the component areas within the country, the present mid-year estimate has been obtained by estimating the local movement which has taken place since the date of the 1931 census and modifying the 1931 position in respect of such movement. It may be mentioned that the local estimates purport to represent the *resident* populations of the several areas and are, in this respect, different from census populations as generally understood in this country, which consist simply of the persons enumerated in the several areas on census night, whether resident in the area of enumeration or not.

The principles and procedure governing the identification of the basic 1931 resident population and the estimation of the changes in that population which have taken place since 1931 are similar in all general respects to those adopted for the 1936 estimates, and for their fuller discussion reference may be made to the population section of the text portion of the Statistical Review for 1936.

Since the date of the 1931 census, a decline in total population is estimated as having occurred in North I and in the two Welsh regions (*see* Part II, Table E, p. 10). The largest increases in population occur in the area of the South-East region outside of Greater London, 88·4 per 1,000, followed by Greater London 52·1, and Midland I, 36·7. The analysis according to degree of urbanisation, shows a very small decrease, 2·0 per 1,000, in the total population of the county boroughs—associated with an outward migration of 19·5 per 1,000. The aggregate population of the urban districts shows an increase of 32·6 per 1,000 (14·8 natural increase and 17·8

inward migration) and that of the rural districts an increase of 41·0 per 1,000 (20·0 natural increase and 21·0 inward migration). In this comparison with the 1931 census population the effect of boundary changes has been excluded by adjustment of the census population for all changes that have taken place between the date of the census and 30th June, 1937.

Institutions.—In the census classification of population according to residence, the populations of institutions, *e.g.*, Public Assistance Institutions, Infirmaries, Hospitals, Mental Institutions, etc., were dispersed to their home areas where it was anticipated that they would be discharged within a period of six months; otherwise they were retained in the Institution area. This convention is reflected in the current population estimates but is not precisely identical with the procedure in the areal classification of deaths where it is customary to transfer all institution deaths to former area of residence (if known) irrespectively of the time spent in the Institution.

Local Age Distributions.—Sex and age distributions for large geographical regions of the country are shown in Table 2 of Part I. The populations at ages under five were obtained by the survivorship method (*see* page 191), and for later ages the predetermined total populations, obtained as described in the preceding section, were distributed in accordance with the 1931 census age and sex distribution of the unit, the resulting figures being thereafter modified to allow for the change, between the date of the Census and the middle of the year 1937, in the age distribution of the total population of the country.

United Kingdom and Eire.—The populations of each of the countries of the United Kingdom and of Eire, as estimated by their respective Registrars-General, are shown for each year from 1898 in Table A of Part II.

MARRIAGES.

The marriages registered in England and Wales during the year 1937 numbered 359,160, corresponding to a rate of 17·5 persons married per 1,000 of the population of all ages and conditions. The number so registered is 4,516, or 1·27 per cent. more than the number registered in 1936, and apart from the year 1915 and the years immediately following the war, 1919 and 1920, is the largest number in any year since the commencement of civil registration in 1837. The rate of 17·5 in 1937 is higher than any of the rates recorded in the post-war years 1921 to 1936, and, apart from 1915, 1919 and 1920, it has not been exceeded since 1873 when there was a rate of 17·6. The highest rate attained since 1838 (except for the years 1915, 1919 and 1920) was 17·9 in 1853. (*See* Part II Tables B and C.)

The preference for the third quarter, noticeable in the records since the beginning of the present century, was maintained in 1937, the marriages in this period being 33·8 per cent. of the total, while the fourth, formerly the outstanding favourite, ranks second out of the four. The rate for the first quarter, 14·0 persons married per 1,000 population, follows the usual rule in being the least of the four.

Since many marriages take place at Easter, its position, whether in the first or second quarter, makes an appreciable difference to the proportions of marriages that are celebrated respectively in these quarters. In 1937, in which Easter Sunday fell on March 28, the proportion of marriages was 19·7 per cent. of the year's total in the first quarter and 22·3 in the second. In the years 1933 to 1936, in each of which Easter fell in April, the average proportion was 15·0 per cent. in the first quarter and 27·1 in the second.

In the following table (C) the marriages of a series of years are compared with the unmarried population at all ages over 15. By eliminating the progressively falling proportion of children under 15 from the population at risk, the rates of recent years are scaled down slightly in relation to those of earlier periods, but the principal interest of the table is in showing the difference in the course of the rates as between the two sexes. The actual difference between the male and female ratios is due to the inequality of the numbers of unmarried men and women in the population, and since the former have always been in a minority—which has been unduly exaggerated as a result of the war—it is their numbers which primarily determine the marriage-ability of the population, so that, from one point of view, the male ratios may be regarded as providing the better indexes to the variations that have occurred from time to time in the incidence of marriage. In Table C (Part II), the series is taken back to 1897. The male rate in 1937, 60·2 per 1,000, is higher than any rate since 1921, and the female rate, 47·2, higher than any since 1920.

Fluctuations of the general Marriage-rate in different Sections of the Country.—In Table CI comparison is made of the year's marriages and marriage-rates in large geographical sections of the country, and an analysis of the rates in regions and counties is shown in Table F (Part II).

The determination of marriage-rates for localities is not wholly satisfactory. In a large proportion of cases the district of registration is the district of residence of only one of the parties and in some cases of neither. This difficulty, however, is of less moment in comparisons between large sections of the country than between smaller localities.

Among males, the highest frequency occurs in Midland I (65·5 per 1,000 aged 15 and over); but North III (62·9) Midland II (62·8) and the South-East (62·3) have frequencies that are not far behind.

These are the only regions in which the average of 60·2 is exceeded. Among females the highest places are occupied by Wales I and North I as in 1934, 1935 and 1936. The lowest frequency, for both males and females, is recorded in Wales II.

Table C.—Annual Number of Marriages of Men and Women per 1,000 Unmarried Population of each Sex aged 15 and over, 1871–1937.

NOTE.—For the decennial series of census years 1871 to 1931 the annual numbers of marriages have been taken as the average of the three years about each census. For the single year series from 1920 the rates for individual years are shown.

Year.	Bachelors, Widowers, Spinsters and Widows.	Bachelors and Widowers.	Spinsters and Widows.
1871	57·2	62·3	52·9
1881	51·5	56·0	47·6
1891	49·8	54·6	45·7
1901	48·7	53·5	44·7
1911	46·3	50·8	42·5
1921	54·1	62·7	47·6
1931	46·7	53·3	41·5
1920	61·7	71·5	54·7
1921	52·1	60·4	45·8
1922	48·2	55·8	42·5
1923	46·6	53·9	41·1
1924	46·6	53·6	41·2
1925	46·2	53·3	40·9
1926	43·4	50·0	38·3
1927	47·5	54·8	41·9
1928	46·4	53·7	40·9
1929	47·7	55·2	41·9
1930	47·8	55·6	42·0
1931	46·8	53·4	41·6
1932	46·1	52·6	41·1
1933	48·1	54·9	42·8
1934	52·2	59·6	46·4
1935	52·5	59·9	46·8
1936	52·7	60·1	46·9
1937	52·9	60·2	47·2

From the analysis in Table F it will be seen that, among the counties there compared, the 1937 marriage-rate is highest in London, where it exceeds the mean for the country by 25·1 per cent. followed in order by Warwickshire, Bedfordshire and Staffordshire, with excesses ranging from 12·0 to 8·6 per cent. In England, the lowest rates occur in Sussex (14·9 persons married per 1,000 population) and Cambridgeshire (15·0), but in Wales the counties

of Anglesey, Brecknock, Caernarvon, Cardigan, Merioneth and Radnor all return lower rates than these.

Table CI.—Marriage-rate per 1,000 Unmarried Population aged 15 and over in Geographical Sections of the Country.*—1936 and 1937.

Area.	Ratio of unmarried males per 1,000 unmarried females aged 15 and over (Census 1931).	Rate per 1,000 Unmarried Population aged 15 and over.				Ratio of local rate to England and Wales rate (taken as 1,000).			
		1936.		1937.		1936.		1937.	
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
England and Wales.	778	60·1	46·9	60·2	47·2	1,000	1,000	1,000	1,000
South-East ..	711	62·2	44·5	62·3	44·7	1,035	949	1,035	947
North	796	59·3	47·5	59·0	47·5	987	1,013	980	1,006
North I ..	959	55·9	54·0	55·0	53·4	930	1,151	914	1,131
North II ..	866	53·6	46·8	53·4	46·7	892	998	887	989
North III ..	794	62·8	50·2	62·9	50·5	1,045	1,070	1,045	1,070
North IV ..	736	59·9	44·4	59·7	44·4	997	947	992	941
Midland ..	807	63·9	51·9	64·6	52·7	1,063	1,107	1,073	1,117
Midland I ..	797	64·7	52·0	65·5	52·8	1,077	1,109	1,088	1,119
Midland II ..	826	62·3	51·8	62·8	52·5	1,037	1,104	1,043	1,112
East	878	54·9	48·5	54·6	48·5	913	1,034	907	1,028
South-West ..	743	54·9	41·1	55·3	41·5	913	876	919	879
Wales	986	50·9	50·5	51·1	51·0	847	1,077	849	1,081
Wales I ..	1,060	52·4	55·9	52·7	56·6	872	1,192	875	1,199
Wales II ..	833	46·9	39·4	47·2	39·8	780	840	784	843

* For the constitution of the several sections, *see* page 32.

The City of London returns a rate nearly six times as high as the average of England and Wales; and, of the Metropolitan Boroughs, several have high rates, notably Holborn and Westminster where rates of about twice the average are found. Such rates give support to the belief that many persons who usually live in the provinces or abroad come to London to be married. At the census of 1931 these three areas returned higher proportions of population living in hotels, boarding-houses, etc., than any of the other Metropolitan Boroughs. Only one Metropolitan Borough—Finsbury—has a rate which is lower than the average for England and Wales. Among the county boroughs distinguished, the highest rates occur in West Ham, Dudley, and Coventry and the lowest in Southport and Hastings.

Marriage rates by ages, which provide a more exact statement of the incidence and intensity of marriage than the aggregate rates just considered, are shown in Table CII. The rates for the censal years 1871 to 1931, being based on enumerated populations, are liable to rather smaller errors than those for 1932 to 1937 which are based on post-censal estimates of population.

By the Age of Marriage Act, 1929, any marriage between persons either of whom is under 16 years of age is void. Notwithstanding

this, the heading—15– —of column (2) of Table CII has been retained for reasons of convenience. The marriages in this country of persons under 16 years of age have been relatively insignificant since 1838 when civil registration began.

It will be observed from the last column of Table CII, which compares the actual marriages of each year with a standard number, viz., those expected according to the age rates of 1921, and which makes allowance, therefore, for the changing age constitution of the unmarried population, that of the four sections distinguished, bachelors, widowers, spinsters and widows, the 1937 frequencies are lower than those of 1921 (except for spinsters), the percentages to the 1921 frequencies being, in order, spinsters 115·2, bachelors 93·2, widowers 89·2 and widows 79·6. On this basis of comparison all the marriage frequencies are higher than in recent years, that for bachelors being almost as high as in 1871, and that for spinsters being the highest shown in the Table.

From the age analysis shown in the earlier columns of Table CI, it will be seen that with unimportant exceptions the 1937 rates for bachelors, widowers and widows have decreased as compared with those for 1921 in all age-groups, but that for spinsters they have increased in all age-groups, except 45-55. The maintenance of the marriage-rate of young spinsters at a point well in excess of the corresponding rates prior to 1914 has been a feature of the returns of recent years. With both bachelors and spinsters, the rates for the age period 25–35, at which more than one-half and one-third respectively of the marriages of these classes take place, are higher than those of any pre-1914 year shown in the table, while for bachelors the excess extends to all higher ages. Increases in the age rates of 1937 over those of 1936 are recorded for bachelors at 20–25 and at all ages over 35; for widowers, at all ages over 25; for spinsters at all ages except 25–35, and for widows, at all ages over 20.

Widowers' and widows' rates as compared with 1921 show a consistent fall in all the age divisions identified except under 20 where the numbers are too small to yield reliable rates. Widowers' rates are largely in excess of the corresponding bachelors' rates, so that it may be said that re-marriages in the case of males are relatively more frequent than first marriages. Comparison of the rates for spinsters and widows shows that the latter have the advantage in all age groups except at 25–35. The age analysis serves to call attention to the misleading nature of the comparison suggested by the aggregate marriages per 1,000 population shown in column 8 of Table CII; owing to the concentration of the single population at the younger ages where marriages are numerous, and the widowed population at the later ages where they are few, the aggregate rate for the single of each sex appears to be vastly in excess of that of the widowed, whereas, if allowance be made for the difference in their age constitutions, the relative positions are modified and,

Table CII.—Annual Marriage-rate per 1,000 Bachelors, Widowers, Spinsters and Widows respectively at each of several Age Periods, 1871–1937.

NOTE.—Prior to 1921 the annual numbers of marriages have been taken as the average of the three years about each Census.

Year.	Annual marriage-rate per 1,000 in each age group.						Marriage-rate per 1,000 population over 15 in each class.	Ratio to corresponding rate for 1921 taken as 1000.	Marriage-rate which would have resulted had the 1921 age rates been in operation.	Ratio of actual marriage rate (col. 8) to rate in previous column (10).
	15—	20—	25—	35—	45—	55 and over.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				BACHELORS.						
1871 ..	6·0	122·4	119·3	43·3	15·3	3·2	61·7	987	62·3	990
1881 ..	4·6	106·8	112·4	40·5	14·3	3·0	55·7	891	62·4	893
1891 ..	3·1	94·7	122·4	43·4	15·2	3·5	54·8	877	63·8	859
1901 ..	2·5	85·9	123·7	44·2	14·6	3·3	54·7	875	66·6	821
1911 ..	2·2	74·8	120·6	44·4	14·9	3·9	52·6	842	69·2	760
1921 ..	3·4	94·4	161·1	61·6	19·7	5·5	62·5	1,000	62·5	1,000
1931 ..	3·3	72·3	140·3	52·7	18·1	5·7	56·2	899	67·7	830
1932 ..	3·4	69·7	136·9	51·1	16·9	5·2	55·5	888	68·7	808
1933 ..	3·4	70·4	142·2	51·3	18·3	5·4	58·2	931	70·2	829
1934 ..	3·6	75·0	153·2	54·7	19·0	5·4	63·7	1,019	71·6	890
1935 ..	3·2	76·7	155·2	57·3	18·6	5·3	64·1	1,026	70·9	904
1936 ..	2·7	79·8	156·3	59·4	19·1	5·5	64·4	1,030	69·9	921
1937 ..	2·7	82·3	156·0	61·0	19·4	5·7	64·4	1,030	69·1	932
				WIDOWERS.						
1871 ..	11·5	229·0	288·5	181·5	88·3	15·9	65·8	1,475	56·0	1,175
1881 ..	30·6	192·9	246·5	157·8	76·9	16·0	58·2	1,305	56·0	1,039
1891 ..	14·1	153·4	231·7	151·1	74·7	15·5	53·4	1,197	53·7	994
1901 ..	—	132·6	201·7	134·1	65·3	13·5	44·4	996	51·0	871
1911 ..	—	121·6	171·2	117·9	59·4	12·7	36·9	827	47·4	778
1921 ..	14·3	163·7	229·3	155·2	73·5	15·8	44·6	1,000	44·6	1,000
1931 ..	62·5	98·1	179·8	122·3	65·4	14·8	33·1	742	38·5	860
1932 ..	—	103·9	177·6	124·3	62·7	14·0	31·8	713	38·1	835
1933 ..	—	95·3	177·2	125·6	64·9	14·2	31·9	715	37·6	848
1934 ..	—	96·5	181·9	128·1	66·7	14·3	32·1	720	37·1	865
1935 ..	—	105·1	185·2	125·7	67·6	14·4	31·9	715	36·7	869
1936 ..	142·9	115·4	177·9	126·7	66·3	14·1	31·1	697	36·3	857
1937 ..	66·7	102·5	186·5	126·8	69·7	14·9	32·1	720	36·0	892
				SPINSTERS.						
1871 ..	26·8	133·7	85·9	30·4	11·9	1·7	63·1	1,164	55·8	1,131
1881 ..	21·5	121·9	80·6	26·3	10·4	1·6	56·9	1,050	55·8	1,020
1891 ..	16·2	112·4	85·7	26·4	10·3	1·7	54·4	1,004	57·1	953
1901 ..	12·9	104·9	88·6	25·3	9·1	1·5	53·0	978	58·6	904
1911 ..	11·2	97·7	91·1	24·4	8·5	1·8	50·6	934	58·0	872
1921 ..	14·8	114·4	100·0	25·6	8·9	2·0	54·2	1,000	54·2	1,000
1931 ..	17·1	106·9	97·2	22·3	8·3	2·2	51·9	958	53·9	963
1932 ..	17·7	105·1	96·4	22·1	7·8	2·1	51·6	952	54·1	954
1933 ..	18·7	109·2	101·2	22·5	8·1	2·3	54·3	1,002	54·5	996
1934 ..	20·3	118·6	110·1	24·4	8·3	2·1	59·4	1,096	55·0	1,080
1935 ..	19·1	123·2	111·8	25·2	8·6	2·1	59·9	1,105	54·4	1,101
1936 ..	18·4	129·2	112·1	26·4	8·6	2·1	60·3	1,113	53·5	1,127
1937 ..	19·4	133·5	112·0	27·7	8·8	2·2	60·6	1,118	52·6	1,152
				WIDOWS.						
1871 ..	55·4	170·5	125·5	55·7	20·8	2·6	21·1	1,172	19·6	1,077
1881 ..	56·6	155·3	114·5	50·2	18·6	2·6	18·2	1,011	18·5	984
1891 ..	49·3	150·4	114·3	50·3	17·8	2·4	16·3	906	16·8	970
1901 ..	54·9	140·7	115·9	48·9	15·6	2·1	14·4	800	15·6	923
1911 ..	30·0	151·2	114·1	48·9	15·6	2·1	12·5	694	13·6	919
1921 ..	36·1	191·4	120·3	50·6	17·6	2·5	18·0	1,000	18·0	1,000
1931 ..	57·1	140·8	93·0	33·2	13·6	2·2	8·7	483	11·7	744
1932 ..	14·3	153·2	84·8	31·9	12·3	2·1	8·0	444	11·4	702
1933 ..	45·5	137·7	87·0	32·2	12·2	2·1	7·9	439	11·2	705
1934 ..	83·3	158·4	89·8	33·1	13·0	2·1	8·0	444	11·0	727
1935 ..	—	166·3	90·5	34·5	12·8	2·2	8·0	444	10·7	748
1936 ..	104·5	170·0	88·2	34·4	12·9	2·2	7·8	433	10·5	743
1937 ..	43·5	181·7	96·3	36·0	14·1	2·4	8·2	456	10·3	796

for all age-groups among males and nearly all age-groups among females, are in favour of the widowed.

Table CIII.—Proportions of First Marriages and Re-marriages in 1,000 Marriages, 1918–1937.

Year.	Men.		Women.		Bachelors who married—		Widowers who married—	
	Bachelors.	Widowers.	Spinsters.	Widows.	Spinsters.	Widows.	Spinsters.	Widows.
1918	901	99	894	106	837	64	57	42
1919	897	103	875	125	816	81	59	44
1920	907	93	894	106	839	68	55	38
1921	911	89	909	91	855	56	54	35
1922	913	87	920	80	866	47	54	33
1923	915	85	929	71	875	40	54	31
1924	916	84	932	68	880	36	53	31
1925	916	84	937	63	884	32	53	31
1926	917	83	940	60	887	30	53	30
1927	918	82	942	58	890	28	52	30
1928	921	79	943	57	893	28	50	29
1929	920	80	946	54	894	26	51	29
1930	923	77	949	51	897	25	51	27
1931	924	76	950	50	900	24	50	26
1932	925	75	953	47	903	22	50	25
1933	926	74	954	46	904	22	50	24
1934	930	70	956	44	909	21	47	23
1935	931	69	957	43	910	21	47	23
1936	932	68	958	42	912	20	45	22
1937	930	70	955	45	909	21	46	23

Table CIII shows how the proportions of first marriages and re-marriages have varied from 1918 to 1937. In 1937 the proportion of first marriages for both sexes fell slightly, compared with 1936, with a consequent rise in the proportion of re-marriages. Until this year an increasing trend in the proportion of first marriages had been observable for both sexes, and especially for women, since 1919.

Tables L and K, which appear in Part II of this Review, continue the series shown in previous issues of the Text Volume (Tables LXXXVI and LXXXVII in the volume for 1930). They classify by age the marriages of a number of years, the former giving the mean ages of the persons married in each of the possible combinations, and the latter extending the analysis into a number

of age-groups. Table K shows that, during the last 50 years or so, the modal age of marriage has tended to increase steadily among bachelors and spinsters and the proportion marrying under 21 years of age to decrease. For bachelors, the most popular age has passed from 21–25 to 25–30, for widowers, from 35–40 to 50–55, and for widows, from 35–40 to 40–45 ; while for spinsters, although the modal group has not changed—being 21–25—the position of the mode has risen within the group. The proportion marrying under 21 years of age has decreased from 7·1 per cent. in 1886–90 to 3·4 in 1937 for bachelors, and from 21·5 to 15·5 for spinsters.

Table G (Part II) shows that more men married at age 24 and more women at age 23 than at any other age. Table J shows the ages of husbands and wives in combination. Among those under 25, for whom the data are given by single years of age, there is a tendency for brides to be about a year younger than bridegrooms.

Marriages of Minors.—Of the males married during the year, 11,490, or 3·20 per cent., were under the age of 21, and of the females 53,271, or 14·8 per cent., as compared with 3·30 per cent., and 14·4 per cent. last year respectively (*see* Tables M and CIV). The male rate is lower than any recorded and is less than half of that shown for 1876–80. Females, who have always greatly outnumbered the males in this class—in the present year the ratio is more than $4\frac{1}{2}$ to 1—naturally show the highest rates and the greatest changes in the rate; they formed 18·8 per 1,000 of the unmarried and widowed females aged 15–21 in 1911, were 26·6 in 1920, and are now 28·2, while the corresponding rates for males were 5·5, 8·8 and 5·8 per 1,000 respectively (*see* Table CV).

Comparative figures are shown in Table CV for certain years back to 1901, before which the age-group 15–21 was not identified in the population returns; an indication of the trend of youthful marriage-rates in earlier periods may be gained from Table CIV.

The proportions of males and females marrying under age are summarised for regions in Table CVI, and the numbers are stated in Table M (Part II). Much of the variation there shown is but a reflex of the incidence of the general marriage-rate (Table C), and regard must necessarily be had to the latter in considering how far the former provides evidence of local custom regarding early marriage. In 1937 the areas in which the proportion of male minors marrying is highest are Midland II and North III. For females, the corresponding areas are Wales I and North I. The lowest proportion for males is returned in Wales II, and for females in North IV. As between 1936 and 1937, decreases are recorded for males in all regions, except in Midland II, South-West and Wales II and increases for females in all regions, except in North I and IV and Wales I.

Table CIV.—Minors Married per 1,000 Marriages at all Ages, 1876–1937.

Year.	Husbands.	Wives.	Year.	Husbands.	Wives.
1876–80 ..	77·8	217·0	1921 ..	48·2	149·2
1881–85 ..	73·0	215·0	1922 ..	44·4	144·4
1886–90 ..	63·2	200·2	1923 ..	42·5	142·9
1891–95 ..	56·2	182·6	1924 ..	40·4	140·3
1896–1900 ..	51·2	168·0	1925 ..	40·6	142·3
1901–05 ..	46·3	153·1			
1906–10 ..	40·3	139·4	1926 ..	43·3	147·5
1911–15 ..	39·2	136·6	1927 ..	41·4	146·1
1916–20 ..	42·6	133·3	1928 ..	43·5	151·5
1921–25 ..	43·3	143·9	1929 ..	41·8	151·7
1926–30 ..	42·5	150·5	1930 ..	42·6	155·3
1931–35 ..	40·8	155.6			
			1931 ..	43·5	158·5
1917	41·7	134·2	1932 ..	43·6	160·4
1918	42·6	129·0	1933 ..	40·8	157·9
1919	43·7	129·4	1934 ..	39·1	153·0
1920	46·8	142·9	1935 ..	37·3	149·3
			1936 ..	33·0	144·3
			1937 ..	32·0	148·3

Table CV.—Annual Marriage-rate per 1,000 Unmarried and Widowed Persons in the age-group 15–21 in 1901, 1911, 1921, 1931 and 1927–37.

Year.	Males.		Females.	
	Rate.	Ratio to 1921. Per Cent.	Rate.	Ratio to 1921. Per Cent.
1901	6·7	87	21·6	92
1911	5·5	71	18·8	80
1921	7·7	100	23·4	100
1931	6·7	87	24·8	106
1927	6·0	78	21·6	92
1928	6·2	81	22·1	94
1929	6·2	81	23·0	98
1930	6·4	83	24·0	103
1931	6·7	87	24·8	106
1932	6·8	88	25·4	109
1933	6·8	88	27·1	116
1934	7·3	95	29·7	127
1935	6·9	90	28·8	123
1936	6·1	79	27·7	118
1937	5·8	75	28·2	121

Table CVI.—Marriage-rate of Minors per 1,000 Unmarried Population aged 15–21 in Geographical Sections of the Country,* 1936 and 1937.

Area.	1936.				1937.			
	Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.		Rate per 1,000 Unmarried Population 15–21.		Ratio of local rate to England and Wales rate taken as 1,000.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
England and Wales.	6·1	27·7	1,000	1,000	5·8	28·2	1,000	1,000
South-East	5·5	25·7	902	928	5·2	26·1	897	926
North ..	6·4	28·0	1,049	1,011	6·1	28·1	1,052	996
North I ..	5·2	34·1	852	1,231	5·1	33·4	879	1,184
North II ..	6·4	30·2	1,049	1,090	6·1	30·7	1,052	1,089
North III ..	7·2	31·2	1,180	1,126	6·9	32·1	1,190	1,138
North IV ..	6·4	23·8	1,049	859	6·0	23·7	1,034	840
Midland ..	6·8	28·2	1,115	1,018	6·7	29·9	1,155	1,060
Midland I ..	6·5	27·6	1,066	996	6·4	29·8	1,103	1,057
Midland II	7·3	29·5	1,197	1,065	7·4	30·2	1,276	1,071
East	6·5	31·9	1,066	1,152	6·3	32·0	1,086	1,135
South-West ..	5·3	27·6	869	996	5·4	28·3	931	1,004
Wales ..	6·1	34·4	1,000	1,242	5·6	34·3	966	1,216
Wales I ..	6·7	38·1	1,098	1,375	6·0	37·9	1,034	1,344
Wales II ..	4·3	24·3	705	877	4·5	24·7	776	876

* For the constitution of the several sections, *see* p. 32.

Divorces and Remarriages of Divorced Persons.—The annual numbers of marriages dissolved or annulled are shown in Table O and again in Table CVII in terms of the persons involved, for each year since 1921 and for each quinquennium since 1876–80.

During the year 1937, 4,735 divorces and 151 annulments were obtained, the number of persons involved being twice these figures, or a total of 4,886 of each sex.

The number of divorces attained a maximum of 4,735 in the current year. Compared with the number in 1936, they show an increase of 21 per cent. and of 13 per cent. over the number in 1934, which was the previous highest recorded. The numbers are eight or nine times as large as those of the years 1901 to 1910. The number of annulments in 1937 is larger than in any previous year.

It may be noted that the number of decrees nisi made absolute during 1937 (4,735) is about the same as would have resulted if the increasing trend of the years 1930–34 had been maintained. It seems not unlikely, therefore, that some part of the increase in 1937 may be due to efforts to dispose of such cases as had accumulated in 1935 and 1936, in anticipation that still greater numbers of matrimonial cases were to be expected, in 1938 and in the following years, under the provisions of the Matrimonial Causes Act, 1937, which operated from 1st January, 1938.

From Table CVII it will be seen that the number of persons who on remarriage described themselves as divorced shows an increase and is greater than the corresponding figure recorded for any earlier year. In view of the increasing numbers of divorces, an increasing trend in such marriages is to be expected. There are substantial increases in each of the categories distinguished. The numbers may understate the facts owing to misdescription of status in the registers.

Table CVII.—Annual Number of Persons Divorced, and of Divorced Persons who Remarried, 1876–1937.

Period.	Number of Persons Divorced.	Annual Number of Divorced Persons who remarried.							
		Total.	Men.	Women.	Divorced men marrying spinsters.	Divorced men marrying widows.	Divorced men and women inter-marrying.	Divorced women marrying bachelors.	Divorced women marrying widowers.
1876–80 .. (Average)	554	104	56	48	42	12	4	31	15
1881–85 .. (Average)	671	128	68	60	53	12	6	42	15
1886–90 .. (Average)	707	169	80	89	65	11	8	65	20
1891–95 .. (Average)	744	214	110	104	89	15	12	75	23
1896–1900 .. (Average)	980	345	172	173	138	24	20	126	37
1901–05 .. (Average)	1,126	509	262	247	205	38	38	181	47
1906–10 .. (Average)	1,247	693	356	337	276	53	54	253	57
1911–15 .. (Average)	1,312	820	411	409	330	50	62	309	69
1916–20 .. (Average)	3,019	1,264	683	581	525	127	62	439	111
1921–25 .. (Average)	5,467	3,050	1,708	1,342	1,316	295	194	976	269
1926–30 .. (Average)	6,716	3,917	2,128	1,789	1,662	270	392	1,225	368
1931–35 .. (Average)	8,022	5,154	2,777	2,377	2,179	302	592	1,597	484
1921 ..	7,044	2,878	1,592	1,286	1,182	330	160	939	267
1922 ..	5,176	3,374	1,913	1,461	1,457	360	192	1,062	303
1923 ..	5,334	3,008	1,679	1,329	1,307	279	186	1,002	234
1924 ..	4,572	2,903	1,627	1,276	1,267	275	170	931	260
1925 ..	5,210	3,088	1,729	1,359	1,367	229	266	944	282
1926 ..	5,244	3,124	1,710	1,414	1,325	231	308	995	265
1927 ..	6,380	3,576	1,924	1,652	1,509	244	342	1,133	348
1928 ..	8,036	4,125	2,268	1,857	1,764	302	404	1,299	356
1929 ..	6,792	4,427	2,408	2,019	1,886	307	430	1,357	447
1930 ..	7,126	4,331	2,330	2,001	1,826	267	474	1,342	422
1931 ..	7,528	4,668	2,517	2,151	1,963	299	510	1,456	440
1932 ..	7,788	4,824	2,537	2,287	2,011	259	534	1,539	481
1933 ..	8,084	5,068	2,747	2,321	2,135	318	588	1,571	456
1934 ..	8,574	5,545	3,026	2,519	2,378	321	654	1,662	530
1935 ..	8,138	5,662	3,056	2,606	2,407	312	674	1,758	511
1936 ..	8,114	6,468	3,507	2,961	2,788	354	730	2,009	587
1937 ..	9,772	6,988	3,759	3,229	2,964	374	842	2,192	616

In Table P are given certain particulars concerning the marriages in respect of which suits for dissolution or annulment were commenced during the year. 4,606 petitions were filed at the Principal Registry in London and 1,297 at 38 District Registries. In respect of the petitions filed at the Principal Registry in London, the most frequent duration of marriage at the date of the commencement of the proceedings is from 5–10 years with an average of 293 for each of those years of duration, but the maximum is not of particular significance, for this period only accounts for 32 per cent. of the cases, there being 15 per cent. of shorter duration, while in 53 per cent. the marriages had subsisted for 10 years or more. Forty-four per cent. of the marriages in question were childless, and in

a further 31 per cent. there was one child only. These figures are substantially similar to those recorded in the years 1931 to 1936.

Buildings in which Marriages may be Solemnized.—At the end of the year 1937 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings in which marriages could be legally solemnized, were as follows :—

	Number at the end of 1937.	Number added in 1937.	Increase per cent. since 1921.
Established Church and Church in Wales	16,576	21	2·6
All other religious denominations	21,396	163	18·2
Total	37,972	184	10·8

The number of these buildings belonging to the various denominations is shown for the several geographical regions in Table N, which thus provides some indication of the relative strength of the various religious bodies in different parts of the country.

By the Acts 15 and 16 Vict. c. 36, and 18 and 19 Vict. c. 81, it was enacted that all places of religious worship not being churches or chapels of the Established Church, should, if the congregations desired, be certified as such to the Registrar-General, certification for public religious worship being a necessary preliminary to the registration of a building for the solemnization of marriages.

The number of places of meeting for religious worship on the official register on the 31st December, 1937, and the number of buildings registered for the solemnization of marriages are shown in Table CVIII.

The Marriage Act, 1898, provided that under specified conditions marriages might be solemnized in registered buildings in the presence of duly authorised persons without the attendance of a Registrar of Marriages. The governing bodies of some of the registered buildings have availed themselves of this provision, and at the end of the year 1937 the number of such buildings which had been brought under the operation of the Act, and so remained, was 7,200 out of the total of 21,396. The numbers of these buildings, and the denominations to which they belonged, were as follows :—

4,716	Methodist Church.
1,018	Congregationalists.
750	Baptists.
170	Calvinistic Methodists.
546	Other Denominations and Unsectarian.
7,200	All Denominations.

The increase of 180 which took place in 1937 in the number of buildings certified as meeting-places for religious worship under the

Table CVIII.—Buildings certified as places for Worship and registered for Marriages.

Denomination.	Buildings certified to the Registrar-General as meeting-places for Religious Worship.	Buildings registered for the Solemnization of Marriages.*	Increase or decrease (—) per cent. since 1921 in the number of buildings certified for Religious Worship.
Roman Catholics	2,072	1,903	32·8
Methodist Church‡	13,539	8,735	— 3·1
Congregationalists	3,526	3,256	4·8
Baptists	3,458	3,115	8·5
Calvinistic Methodists	1,392	1,128	7·2
Presbyterians	467	464	4·2
Unitarians	186	196	1·1
New Church	60	63	9·1
Catholic Apostolic Church	61	50	— 12·9
Countess of Huntingdon's Connexion	45	40	— 4·3
Salvation Army	1,523	387	34·1
Society of Friends	419	†	— 2·8
Jews	339	†	30·9
Other Denominations	5,914	2,059	77·3
All Denominations	33,001	21,396	12·5

* Of these buildings nearly 1,000 were certified before 1852, as Places of Meeting for Religious Worship to some other authority than the Registrar-General and therefore are not included in the preceding column.

† It is not necessary for buildings to be registered for the solemnization of Quaker or Jewish marriages. Under section 31 of the Births, Deaths, and Marriages Registration Act (1836), Registering Officers of the Society of Friends and Secretaries of Jewish Synagogues who have been certified to the Registrar-General record the marriages in each case.

‡ Includes Wesleyan Methodist, Primitive Methodist and United Methodist Churches.

heading "Other denominations" in Table CVIII is made up as follows :—

Apostolic Church	14
Assemblies of God	13
Brethren	10
British Mazdaznan Association	2
Christadelphians	7
Christians	11
Christians, not otherwise designated	29
Christian Scientists	12
Christian Spiritualists	16
Elim Foursquare Gospel Alliance	12
International Bible Students' Association	2
Jehovah's Witnesses	4
Latter Day Saints	8
Liberal Catholic Church	1
Pauline Union Church	1
Seventh Day Adventists	5
Spiritualists	29
Theosophists	2
Undenominational Christians	1
Unsectarian	1
Total ..	180

LIVE BIRTHS.

The live births registered during 1937 numbered 610,557, corresponding to a birth-rate of 14·9 per 1,000 of the population living. (Part II, Tables B and C.)

The number of births is 5,265 more than those of 1936, an increase of 0·87 per cent.

The birth-rate in this country attained its highest values since the commencement of civil registration during the period 1865-1880, when it exceeded 35 per 1,000 population, and from that time it diminished by gradual and practically continuous stages to 23·8 in 1914. During the war of 1914–18, the rate decreased to a minimum of 17·7 in 1918. Following the return to this country of the combatants, the rate rose rapidly, reaching 25·5 in 1920. Since then it fell, with varying rapidity, to 14·4 in 1933, the lowest figure so far recorded. In 1934 the rate rose to 14·8, in 1935 it was 14·7, in 1936 it was 14·8, and the current rate is 14·9. Thus for four successive years the birth-rate has exceeded the minimum recorded in 1933 and, to that extent, it might be inferred that the post-war phase of the long continued decline has been arrested. Later returns tend to shew that the present position is being maintained, but further time must elapse before it will be possible to see whether the period is merely an unusually extended halt preceding a still lower fall or whether it is to prove to be a more significant turning point in the history of the rate.

The present rate of recruitment is well below that which is necessary if diminution of the total population in the future is to be avoided.

The recent history of the birth-rate in this country may be compared with that of other countries of which particulars are at hand by reference to Table Q, Part II. The record extends over the period from 1911 to 1937 (for earlier years, *see* the Registrar-General's Annual Report for 1910) and covers therefore not only the years of the war period itself when the movements were quite abnormal, but a number of earlier and later years. Of the countries for which 1937 returns are available, England and Wales, Denmark, Italy, Norway, Sweden, Australia, New Zealand, South Africa and Japan record increases in their birth-rates as compared with 1936, while the remaining 13 show decreases. Three only of these countries, Austria (12·8 per 1,000 population), France (14·7) and Sweden (14·3) have lower rates than that of England and Wales (14·9).

In all the countries listed the recent rates show a fall in comparison with pre-war experience. Compared with 1914 this fall ranges from about 9 per cent. for Japan to about 45 per cent. for Austria. For Germany the fall is about 30 per cent. and for Italy about 26 per cent. In respect of England and Wales the fall, which amounted to 37 per cent., is the more serious since the position of this country in relation to that of others was already a low one before the war. The birth-rate in Germany which attained a post-

war maximum of 25·9 in 1920 fell irregularly to a minimum of 14·7 in 1933. It rose steeply to 18·0 in 1934, and was 18·9 in 1935 and 19·0 in 1936, and fell to 18·8 in 1937. Such increases as are recorded among the several countries included in Table Q are all small, and while they may suggest that minimum rates have now been passed, they may, with almost equal likelihood, indicate merely temporary breaks in the downward progress.

The crude birth-rate, or ratio of births to population of all ages, is a convenient form of statement when the object in view is to record the aggregate effect of all the various factors governing reproduction. It sums up the effects of all the influences governing the rate at which the community is reproducing itself and is, therefore, in conjunction with the corresponding form of mortality statement, the crude death-rate, the appropriate means of measuring natural increase. The number of births in the country, however, depends mainly upon the number of married women at the reproductive ages, and as they form only one-eighth of the total population the variation of their numbers and ages over a period of time may be different from that of the whole population, in which case the crude birth-rates form but an imperfect measure of the changes in fertility, *i.e.* of the rate of reproduction in proportion to the opportunity of reproduction. In the absence of any knowledge of the constitution of the general population the crude rate is often used as an index of fertility, but always on the implied assumption of a fixed proportion of potential mothers, an assumption which may reasonably be made only in respect of short periods of adjacent years.

For a better understanding of the incidence of fertility over periods of time or in different sections of the community, it is necessary to relate the numbers of mothers at various ages to the total women at those ages in the population as a whole. Up to the present time, however, it has not been possible to obtain such series of relationships in respect of this country because of the absence of any provision for recording the age of the mother at the registration of a birth. But the position has at last been altered and the deficiency made good by the Population (Statistics) Act of 1938 which provides for the confidential record of the age of the mother and other facts bearing on her fertility in respect of every birth registered on and after the 1st July, 1938. An analysis of the first half year's returns under the new Act will be included in the Registrar–General's Statistical Review for next year but until that becomes available, knowledge of the varying incidence of fertility in this country will continue to be limited to the partial and indirect evidence obtainable from the Census record. At the Census of 1931 the total numbers of married women enumerated at six groups of age within the child-bearing period were those shown in the first line of Table CIX on the second and third lines of the Table are shown the corresponding numbers and proportions of those married women with whom a child under one year of age was also enumerated.

Table CIX.—1931 Census Record: England and Wales.

Age.	15–20	20–25	25–30	30–35	35–40	40–45
No. of Married Women ..	29,247	433,789	950,572	1,111,784	1,070,501	1,001,730
No.of Infants under 1 year of age enumerated with married women	10,199	108,760	166,059	133,825	82,223	33,858
Proportion of Infants under 1 year of age with married women.. ..	0·349	0·251	0·175	0·120	0·077	0·034

The children thus identified must all have been born in the twelve months preceding the date of the Census and though they will not constitute the whole of the births of that period—some having died before the Census and some not having been enumerated with their parents—the numbers are sufficiently large and representative for it to be reasonable to accept the proportions in the third line of the table as an approximate relative measure of the distribution of legitimate fertility of the period. By appropriate sub-division of the data it is possible to obtain similar indexes in respect of sections of the population,an example of which may be seen in Table CX in which the method has been applied to distinguish variations in the 1931 relative fertilities of different social* groups of married women, using the husband's occupation in each case as the criterion for the social grading.

Table CX.—Proportions of Married Women with whom a child under one year of age was enumerated at the 1931 Census. By Social Class of Husband.

Social Class.*	Proportion of married women enumerated with children under one year of age to total married women in age group.					
	under 20	20–24	25–29	30–34	35–39	40–44
I	·146	·172	·155	·109	·053	·017
II	·276	·199	·159	·108	·060	·022
III	·343	·239	·165	·113	·071	·031
IV	·363	·270	·184	·128	·086	·042
V	·366	·286	·207	·150	·109	·053

* Class I purports to represent the professional and generally well-to-do section of the population, Class III skilled artizan and analogous workers and Class V labourers and other unskilled callings while Classes II and IV are intermediates comprising occupations of mixed types, or types not readily assignable to the classes on either side. This aspect of the investigation was limited to married women who were enumerated with their husbands at the Census.

The investigation from which these and similar indexes are derived will be discussed at greater length in the fertility section of the Registrar–General's 1931 Decennial Supplement yet to be published, and it must be borne in mind meanwhile that they are approximate and relative only in that they are derived from the bulk but not the whole of the population.

The fertility experience of Table CIX has been utilized in the construction of the standardized legitimate birth rate comparisons shewn in the last column of Table CXI. The procedure consisted in (*a*) obtaining a series of standard fertility age factors by appropriate modification of the Table CIX proportions, so that when multiplied by the numbers of married women in 1931 the products aggregated to the total legitimate births of 1931; (*b*) applying the standard factors to the married women for the period with which comparison is to be made and thus obtaining, for that period, the number of births which would have occurred had the standard rates been operating; and (*c*) calculating the ratio of the actual legitimate births of the period to the standard number.

The standard fertility factors for the six quinquennial periods of age between 15 and 45 were 372, 267, 187, 127, 81 and 33 per 1,000 married women in the respective age groups; and the standardized comparisons for Census periods prior to 1931 and for individual years since 1931 are shown in the final column of Table CXI, and are contrasted in that table with the more familiar comparisons given by the crude birth-rates, whether calculated per 1,000 total population or per 1,000 married women between ages 15 and 45. The contrast, however, is not very great, since the general decline over the whole period portrayed by the standardized ratios is but slightly different from that shewn by the simpler comparisons; the chief interest in this somewhat negative result being to show that such changes as have occurred in the distribution of married women over the child-bearing range of ages have not themselves contributed in any marked degree to the great diminution in the birth rate during the period.

Similar standardization in respect of illegitimate fertility has not been attempted on this occasion. No factual experience is available from the general population records of this country of past years, and while it would have been feasible to have continued the hypothetical treatment adopted for this small section of the total births in previous issues of the annual Statistical Review, it has been deemed preferable, in view of early availability of the new data which is forthcoming under the new Act, to defer the fuller examination of illegitimate fertility until next year.

Illegitimate Births.—The live births registered during 1937 include 25,341 of illegitimate children, an increase of 446 on the number in 1936, coincident with the increase of 5,265 in total births. Illegitimate births have thus increased by 1·8 per cent., and legitimate births have increased by 0·8 per cent. As a result of these

changes, the proportion of illegitimate to total births has increased from 4·11 per cent. last year to 4·15 per cent., figures which compare with the minimum of 3·95 per cent. recorded for the period 1901–1905 and the maximum (excluding years prior to 1865) of 6·26 per cent. in 1918.

Table CXI.—Birth-rates and Fertility, 1870–1937.

	Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Married Women, 15–45.	Ratio to 1931.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Legitimate Live Births.					
1870–72	33·3	2,205	292·5	2,380	2,148
1880–82	32·3	2,139	286·0	2,327	2,117
1890–92	29·4	1,947	263·8	2,146	1,983
1900–02	27·5	1,821	235·5	1,916	1,797
1910–12	23·4	1,550	197·4	1,606	1,592
1920–22	21·7	1,437	178·9	1,456	1,460
1930–32	15·1	1,000	122·4	996	999
1931	15·1	1,000	122·7	1,000	1,000
1932	14·6	967	118·0	962	964
1933	13·8	914	110·4	900	905
1934	14·1	934	112·7	919	926
1935	14·1	934	111·9	912	923
1936	14·2	940	112·2	914	929
1937	14·3	947	112·5	917	937

	Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 Unmarried Women, 15–45.	Ratio to 1931.
Illegitimate Live Births.				
1870–72	1·96	2,800	17·0	2,982
1880–82	1·65	2,357	14·1	2,474
1890–92	1·31	1,871	10·5	1,842
1900–02	1·12	1,600	8·5	1,491
1910–12	1·03	1,471	7·9	1,386
1920–22	1·04	1,486	8·1	1,421
1930–32	0·71	1,014	5·8	1,018
1931	0·70	1,000	5·7	1,000
1932	0·67	957	5·6	982
1933	0·63	900	5·4	947
1934	0·64	914	5·6	982
1935	0·62	886	5·4	947
1936	0·61	871	5·3	930
1937	0·62	886	5·4	947

	Births per 1,000 Total Population.	Ratio to 1931.	Births per 1,000 total Women, 15–45.	Ratio to 1931.
All Live Births.				
1870–72	35·3	2,234	153·7	2,387
1880–82	34·0	2,152	147·7	2,293
1890–92	30·7	1,943	129·7	2,014
1900–02	28·6	1,810	114·8	1,783
1910–12	24·5	1,551	98·3	1,526
1920–22	22·8	1,443	91·1	1,415
1930–32	15·8	1,000	64·3	998
1931	15·8	1,000	64·4	1,000
1932	15·3	968	62·6	972
1933	14·4	911	59·4	922
1934	14·8	937	61·5	955
1935	14·7	930	61·0	947
1936	14·8	937	61·2	950
1937	14·9	943	61·4	953

Seasonal Distribution of Births.—The number of births registered in each quarter of the year and their frequency per 1,000 population are shown in Table D. Since 1923 the highest rate has occurred in every case in the second quarter. This contrasts with the experience of 1841 to 1890 when the highest rates usually occurred in the first quarter. The lowest rate is recorded consistently in the fourth quarter. In this connection, it is to be observed that, on the average, an interval of the order of one month elapses between the occurrence and the registration of a birth.

Birth-rates of Different Parts of the Country.—The birth-rates, total and illegitimate, of individual administrative areas are tabulated in Table E (Part II) and summarized in Table CXII for the geographical regions, and their sub-divisions.

Table CXII shows for each of the specified divisions of the country the crude birth-rates of 1936 and 1937, and the ratio of the crude rate to that of the country as a whole.

The birth changes which have occurred between 1936 and 1937 in the geographical regions and types of area shown in the table are in general consonance with the movement in the country as a whole. Comparison of the crude rates in 1936 and 1937 for the several areas shows that in both years the highest for all births are found in North I and II, and the lowest in the South-West and South-East. In both years the lowest rate was found in the South-West, and the highest rate in North I. Crude rates for illegitimate births are highest in North II and Wales II, and lowest in Wales I.

Sex Proportions at Birth.—Births of males in England and Wales in 1937 numbered 313,618 and those of females 296,939 ; the proportion of male to female births was 1,056, 1,065, and 1,056 to 1,000 for legitimate, illegitimate, and total births respectively. The corresponding proportions for total births in each year from 1897 onwards and in groups of years since the commencement of registration are shown in Table C (Part II). The extreme range since 1838 has been from 1,032 per 1,000 in 1898 to 1,060 in 1919. During this period the highest ratio recorded prior to the war of 1914–18 was 1,054 in 1843 and 1844. The current ratio of 1,056 which was also attained in 1935, is the highest recorded since 1919.

The extent to which different classes of area or portions of the country contribute to the preponderance of male births is shown in Table CXIII in which figures are collected for the seven years 1931 to 1937.

The range for the several regions varies from 1,036 to 1,066 in 1932 and 1936, a difference of 30, or 2·9 per cent. of the average ; to 1,038 to 1,103 in 1933, a difference of 65 or 6·2 per cent. of the average. Since the smallest number of births in a region is of the order of 10,000

(in Wales II), it is difficult to ascribe these variations to chance causes. The inconsistency of some of these ratios is illustrated by Wales II, which was the highest in 1932, 1933 and 1935, and the

Table CXII.—Birth-rates by Geographical Regions, 1936 and 1937

(For the constitution of the several regions, see page 32.)

Region.	All Births		Illegitimate Births		All Births		Illegitimate Births	
	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales, taken as 1,000 (Crude Rates).	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).	Birth-Rate per 1,000 Total Population.	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).	Birth-rate per 1,000 Total Population	Ratio to Rate for England and Wales taken as 1,000 (Crude Rates).
	1936.				1937.			
England and Wales	**14·8**	**1,000**	**0·61**	**1,000**	**14·9**	**1,000**	**0·62**	**1,000**
Regional Summary—								
South-East	14·2	959	0·64	1,049	14·2	953	0·63	1,016
Greater London ..	14·2	959	0·62	1,016	14·2	953	0·63	1,016
Remainder of South-East	14·2	959	0·65	1,066	14·3	960	0·64	1,032
			0·62	1,016	15·4	1,034	0·63	1,016
North	15·4	1,041						
North I	16·9	1,142	0·59	967	16·8	1,128	0·61	984
North II	16·3	1,101	0·86	1,410	16·6	1,114	0·89	1,435
North III	14·8	1,000	0·59	967	14·9	1,000	0·61	984
North IV	15·0	1,014	0·59	967	14·9	1,000	0·59	952
Midland	15·5	1,047	0·53	869	15·7	1,054	0·56	903
Midland I	15·8	1,068	0·52	852	16·1	1,081	0·55	887
Midland II	14·9	1,007	0·56	918	15·1	1,013	0·58	935
East	14·5	980	0·73	1,197	14·7	987	0·74	1,194
South-West	13·4	905	0·58	951	13·3	893	0·57	919
Wales	15·1	1,020	0·58	951	15·0	1,007	0·59	952
Wales I	15·3	1,034	0·49	803	15·2	1,020	0·50	806
Wales II	14·4	973	0·82	1,344	14·4	966	0·81	1,306
Density Summary of all Areas outside Greater London—								
County Boroughs.. ..	15·5	1,047	0·65	1,066	15·5	1,040	0·66	1,065
Other Urban Districts ..	14·6	986	0·55	902	14·8	993	0·56	903
Rural Districts	14·8	1,000	0·61	1,000	14·8	993	0·62	1,000

lowest in 1934, and by the South-West which fell from 1,073 in 1931 to 1,057 in 1932 and to 1,046 in 1933 and rose to 1,072 in 1935, to fall again to 1,046 in 1936 and 1937. A similar inconsistency is revealed when the figures are analysed according to degree of urbanization. The ratio for the county boroughs was highest in 1934, lowest in 1931, 1932, 1935 and 1936; for the urban districts, highest in 1931, 1933 and 1935, lowest in 1934 and 1937; for the rural districts, highest in 1932 and 1937, lowest in 1933.

The ratio of male to female births for each county, county borough, urban or rural district may be computed, if desired, from the numbers of births shown in Table E (Part II).

Table CXIII.—Male Births per 1,000 Female Births, 1931–1937.

	1931.	1932.	1933.	1934.	1935.	1936.	1937.
England and Wales ..	**1,049**	**1,050**	**1,046**	**1,055**	**1,056**	**1,054**	**1,056**
Regional Summary—							
South-East	1,047	1,046	1,044	1,058	1,056	1,054	1,059
Greater London ..	1,048	1,052	1,047	1,061	1,057	1,052	1,060
Remainder of South-East ..	1,046	1,036	1,039	1,053	1,054	1,056	1,056
North	1,045	1,050	1,048	1,052	1,055	1,057	1,050
North I	1,050	1,054	1,065	1,058	1,043	1,055	1,056
North II ..	1,072	1,036	1,055	1,044	1,069	1,052	1,036
North III ..	1,041	1,046	1,050	1,052	1,064	1,043	1,057
North IV ..	1,040	1,054	1,039	1,052	1,053	1,066	1,047
Midland	1,054	1,053	1,042	1,061	1,050	1,055	1,057
Midland I ..	1,052	1,048	1,040	1,063	1,046	1,062	1,058
Midland II ..	1,058	1,064	1,047	1,059	1,057	1,039	1,055
East	1,029	1,040	1,038	1,056	1,057	1,036	1,074
South-West ..	1,073	1,057	1,046	1,047	1,072	1,046	1,046
Wales	1,056	1,057	1,059	1,051	1,069	1,059	1,069
Wales I	1,060	1,054	1,044	1,058	1,065	1,064	1,069
Wales II ..	1,043	1,066	1,103	1,031	1,081	1,044	1,069
Density Summary of all Areas outside Greater London—							
County Boroughs	1,043	1,047	1,044	1,061	1,050	1,051	1,054
Other Urban Districts	1,057	1,050	1,052	1,045	1,065	1,057	1,053
Rural Districts ..	1,048	1,052	1,039	1,054	1,052	1,058	1,062

STILLBIRTHS.

Stillbirths registered in England and Wales as a whole are shown for each year in Part II of the Statistical Review, Table B, and for each quarter in Table D. The numbers assigned to metropolitan and county boroughs, and to the aggregates of urban and of rural districts in administrative counties are shown in Part I, Table 18, to which is prefixed a summary for the several larger regions into which the country is divided.

In England and Wales the stillbirths registered during 1937 numbered 24,806 in all, 13,479 being males and 11,327 females; the numbers representing 39, 41 and 37 per 1,000 total births or 41, 43 and 38 per 1,000 live births respectively. The total compares with the figure of 25,045 recorded last year.

Prior to 1st July, 1927, the date on which stillbirth registration became operative in this country under the Births and Deaths Registration Act, 1926, the only record of stillbirths in England and Wales was that obtained from notifications received by Medical Officers of Health. These were published in the successive reports, from 1919 onwards, of the Chief Medical Officer to the Ministry of Health and were summarised in the 1927 Statistical Review (Text p. 128). As the Act of 1926 did not require the registration of stillbirths in Scotland and Northern Ireland, there are no statistics for

those countries with which the figures for England and Wales may be compared.

By the Registration of Stillbirths (Scotland) Act, 1938, the registration of stillbirths is extended to Scotland from 1st January, 1939.

The distribution of the total according to sex, legitimacy and geographical incidence in 1936 and 1937 is summarised in rate form in Table CXIV : in this Table columns have been included from which comparisons may be made between the incidence of stillbirths on the one hand and that of live births or of infant mortality on the other. Wherever the numbers are large enough to form a satisfactory basis of fact, the frequency of stillbirth amongst males is shown to be definitely greater than it is amongst females. The male excess for legitimate births is the same as that of last year, and it is maintained with considerable uniformity throughout the several sections distinguished. For illegitimate births, also, male excess is usually found, but exceptions are recorded in 1937 in Midland I, East and South-West. As between legitimate and illegitimate births, the latter exhibit the higher rates in all sections excepting in North II, the males in East, and the females in North I, the amount of the excess being on a somewhat larger scale than that indicated in the comparison between the sexes.

As regards areal comparison, Wales returns legitimate stillbirth frequencies markedly higher than those of any English sections, which among themselves decrease generally from the North, where the rate is 11 per cent. in excess of the general average, to the South-East where it is 17 per cent. below. The contrasts are not so consistent among the illegitimate frequencies.

The relative positions in the various portions of the country and the close association in this respect between stillbirths and infantile deaths are brought out in the columns of the table in which the stillbirth rate and infantile mortality rate of the year are expressed in relation to that of the country at large, the latter being taken as 1,000 in each case. The similarity of incidence is marked in comparisons made with the mortality of the full first year of life, but the parallelism is found in certain areas to be even closer when the comparison is restricted to the deaths occurring within the four weeks immediately following birth.

Some idea of the local variation of stillbirths may be obtained from Table CXV, which shows the boroughs and the county urban and rural aggregates exhibiting the highest and lowest rates per 1,000 total births in 1937. Areas in which fewer than 20 stillbirths were registered have been omitted. Material for a comparison of live births with stillbirths over the years 1928–1937 is contained in Table CXVI. Comment has been made in previous reports on the main features brought out by this Table. The figures for 1937 are in substantial agreement with those of earlier years. Stillbirths taking place in institutions are the subject of comment at the end of the following section.

Table CXIV.—Stillbirths, 1936 and 1937.

Area.	Stillbirths per 1,000 total births.					Stillbirths per 1,000 total births and Live Births per 1,000 population expressed in relation to corresponding rate for England and Wales taken as 1,000.				Stillbirths per 1,000 total births and Infant Mortality per 1,000 live births expressed in relation to corresponding rate for England and Wales taken as 1,000.		
	Total.	Legitimate.		Illegitimate.		Stillbirths.		Live Births.		Still-births.	Deaths under 4 weeks.	Deaths under 1 year.
		Males.	Fe-males.	Males.	Fe-males.	Legiti-mate.	Illegi-timate	Legiti-mate.	Illegi-timate			
1936.												
England and Wales ..	**39·7**	**42**	**37**	**54**	**48**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Regional Summary—												
South-East	33·0	34	31	48	36	830	829	951	1,049	831	823	886
Greater London ..	32·1	33	30	50	34	804	823	951	1,016	809	814	965
Remainder of South-East.	34·4	36	32	45	40	865	837	951	1,066	866	838	765
North	44·6	46	42	58	52	1,125	1,086	1,042	1,016	1,123	1,137	1,145
North I	43·0	44	40	73	54	1,074	1,250	1,148	967	1,083	1,271	1,265
North II	40·8	43	38	45	48	1,031	910	1,092	1,410	1,028	1,004	1,049
North III	44·2	46	42	52	47	1,120	974	1,007	967	1,113	1,119	1,112
North IV	46·4	48	44	61	55	1,168	1,141	1,014	967	1,169	1,123	1,136
Midland	38·8	41	35	57	51	972	1,065	1,056	869	977	1,048	1,008
Midland I ..	38·4	41	35	53	53	962	1,037	1,077	852	967	1,034	1,003
Midland II ..	39·5	42	36	64	49	990	1,112	1,007	918	995	1,075	1,019
East	38·5	41	33	60	59	952	1,163	972	1,197	970	974	840
South-West	37·6	40	34	44	62	939	1,039	901	951	947	894	814
Wales	54·0	57	50	57	66	1,366	1,218	1,021	951	1,360	1,161	1,056
Wales I	54·7	58	51	58	66	1,387	1,220	1,042	803	1,378	1,153	1,059
Wales II	52·2	55	48	56	67	1,313	1,216	951	1,344	1,315	1,185	1,046
Density Summary of all Areas outside Greater London—												
County Boroughs	41·2	43	38	56	48	1,036	1,024	1,042	1,066	1,038	1,087	1,131
Other Urban Districts.	42·5	44	40	55	50	1,071	1,033	986	902	1,071	1,015	937
Rural Districts ..	41·0	43	37	53	61	1,025	1,114	1,000	1,000	1,033	1,025	903
1937.												
England and Wales ..	**39·0**	**41**	**36**	**53**	**48**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**	**1,000**
Regional Summary—												
South-East	32·7	35	29	49	41	834	895	951	1,016	838	809	862
Greater London ..	31·8	33	29	47	44	810	907	944	1,016	815	796	935
Remainder of South-East.	34·0	37	30	52	36	870	879	951	1,032	872	830	752
North	43·2	45	41	59	48	1,109	1,061	1,035	1,016	1,108	1,154	1,175
North I	41·2	41	40	66	38	1,057	1,036	1,133	984	1,056	1,226	1,286
North II	39·1	44	35	33	31	1,026	634	1,098	1,435	1,003	1,102	1,155
North III	44·3	45	42	61	59	1,132	1,188	1,000	984	1,136	1,118	1,045
North IV	44·3	46	41	63	51	1,138	1,127	1,000	952	1,136	1,157	1,208
Midland	39·9	41	37	50	52	1,026	1,014	1,063	903	1,023	1,041	995
Midland I ..	40·2	42	37	50	58	1,031	1,073	1,084	887	1,031	1,036	992
Midland II ..	39·4	41	38	49	42	1,016	905	1,014	935	1,010	1,050	1,000
East	35·7	38	33	37	55	914	905	979	1,194	915	932	843
South-West	37·8	39	35	47	59	964	1,044	888	919	969	947	800
Wales	51·5	52	49	70	63	1,319	1,317	1,007	952	1,321	1,171	1,085
Wales I	52·1	53	50	74	65	1,335	1,386	1,028	806	1,336	1,160	1,097
Wales II	49·8	50	48	63	59	1,275	1,204	951	1,306	1,277	1,203	1,052
Density Summary of all Areas outside Greater London—												
County Boroughs..	40·4	43	37	52	49	1,036	992	1,035	1,065	1,036	1,078	1,144
Other Urban Districts.	41·8	43	39	57	52	1,073	1,077	993	903	1,072	1,055	962
Rural Districts ..	40·0	41	38	56	46	1,029	1,008	993	1,000	1,026	995	873

Table CXV.—Stillbirths, 1937. Range of local variation. Stillbirths per 1,000 total births.

Metropolitan Boroughs.		County Boroughs.		Urban Aggregates (Excluding County Boroughs).		Rural Aggregates.	
Highest.							
St. Marylebone ..	40	Blackpool ..	65	Merioneth ..	87	Brecon	71
Deptford	39	Burnley	61	Carmarthen ..	56	Montgomery ..	68
Lewisham	38	Wakefield ..	56	Monmouth ..	56	Carmarthen ..	63
Westminster ..	38	Blackburn	54	Glamorgan ..	55	Anglesey	59
Woolwich	38	Bolton	54	Caernarvon ..	54	Pembroke ..	58
Stepney	37	Gloucester ..	54	Flint	52	Cheshire	57
		Oldham	54				
		Merthyr Tydfil ..	54				
		Swansea	54				
Lowest.							
Hampstead	29	Southend-on-Sea ..	32	Suffolk, East ..	32	Surrey	30
Bethnal Green ..	29	Norwich	32	Kent	32	Hereford	30
Battersea	29	Ipswich	31	Hertford	32	Berkshire	29
Poplar	28	East Ham ..	29	Surrey	31	Hertford	25
Hammersmith ..	27	West Hartlepool ..	28	Middlesex ..	31	Bedford	23
		Croydon	28	Leicester	30	Buckingham ..	22
		Bath	27	Sussex, East ..	28		
				Cambridge ..	23		

Table CXVI.—Comparison of Live Births and Stillbirths, 1928–1937.

Year.	Stillbirths per 1,000—		Male births per 1,000 female births.				Illegitimate births per 1,000—			
			Live births.		Stillbirths.		Live births.		Stillbirths.	
	Population of all ages.	Total births (live and still).	Total.	Illeg.	Total.	Illeg.	M.	F.	M.	F.
Col. (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1928 ..	0·70	40·1	1,044	1,041	1,210	1,297	44·9	45·1	64·8	60·5
1929 ..	0·68	40·0	1,043	1,021	1,259	1,311	45·1	46·0	62·9	60·4
1930 ..	0·69	40·8	1,044	1,049	1,235	1,233	45·9	45·6	61·0	61·1
1931 ..	0·67	40·9	1,049	1,059	1,248	1,250	44·6	44·2	61·8	61·7
1932 ..	0·66	41·3	1,050	1,042	1,216	1,197	43·8	44·2	56·5	57·3
1933 ..	0·62	41·4	1,046	1,021	1,180	1,137	43·3	44·3	56·1	58·2
1934 ..	0·62	40·5	1,055	1,049	1,188	1,102	43·0	43·3	56·2	60·7
1935 ..	0·63	40·7	1,056	1,046	1,184	1,065	41·7	42·1	48·6	54·0
1936 ...	0·61	39·7	1,054	1,037	1,196	1,171	40·8	41·5	52·8	53·9
1937 ..	0·60	39·0	1,056	1,065	1,190	1,178	41·7	41·3	54·1	54·6

Births in Institutions.

In the Statistical Review for 1932 a table was given in which births occurring in institutions were analysed according to the type of institution in which they occurred (Text page 142). For 1937 the births occurring in institutions have again been tabulated, but without distinction of the type of institution—public assistance institutions, hospitals, maternity homes and nursing homes being all included under the heading of institutions. Still births occurring in institutions have also been tabulated for the first time in 1937. The results are shown for regions and counties in Tables CXVII and CXVIII

For England and Wales as a whole the number of live births recorded as occurring in institutions was 212,286 or 34·8 per cent. of the total. This compares with 147,170 or 24·0 per cent. in 1932 and 97,933—or 15·0 per cent. in 1927. The increase in numbers in 1937 amounted to 116·8 per cent. over 1927 and to 44·2 per cent. over 1932. Of legitimate births 34·1 per cent. occurred in institutions as against 23·1 in 1932 and 13·9 in 1927, while for illegitimate births the percentages were 50·8, 41·4 and 36·5. Thus the proportion of legitimate births occurring in institutions has increased much more than that of the illegitimate.

The regional distribution of the numbers of births in institutions shows considerable variation, the proportions per cent. of total births ranging from 16·2 in Wales I to 46·8 in the South-East. In 1932 the range was from 7·7 in Wales II to 33·7 in the South-East. For legitimate births the proportions ranged from 15·7 in Wales I to 45·9 in the South-East and for illegitimate births from 27·9 in Wales II to 67·4 in the South-East. Only three regions—South-East, North III and North IV—had a higher percentage of total live births occurring in institutions than that for England and Wales as a whole.

Table CXVII.—Live Births in Institutions, 1927, 1932 and 1937.

Area.	1937				Percentage of Total Live Births occurring in Institutions to total live births assigned to area.		
	Number of Births in Institutions.		Percentage of total legitimate or illegitimate births in area.				
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.	1937.	1932.	1927.
England and Wales	**199,423**	**12,863**	**34·1**	**50·8**	**34·8**	**24·0**	**15·0**
Regional Summary:							
South East	89,358	6,148	45·9	67·4	46·8	33·7	23·7
North	64,450	3,856	33·2	46·9	33·8	23·1	13·0
North I	6,622	479	18·5	35·7	19·1	11·6	8·2
„ II	3,638	408	17·9	35·4	18·8	13·4	8·0
„ III	17,522	1,045	35·4	49·4	36·0	24·5	13·1
„ IV	36,668	1,924	41·6	53·3	42·0	29·8	16·3
Midland	28,450	1,625	26·2	40·6	26·7	18·6	11·4
Midland I	19,394	1,152	26·5	44·6	27·2	19·8	11·6
„ II	9,056	473	25·5	33·3	25·8	16·4	10·8
East	4,878	364	18·9	26·8	19·3	12·2	6·3
South-West	6,430	423	24·4	35·6	24·9	17·4	11·0
Wales	5,857	447	16·4	30·6	17·0	8·2	4·6
Wales I	4,151	292	15·7	32·3	16·2	8·4	4·9
„ II	1,706	155	18·4	27·9	18·9	7·7	3·8
Administrative Counties together with Associated County Boroughs:—							
Bedford	999	83	26·3	54·6	27·4	19·5	6·3
Berks	1,231	80	27·3	34·2	27·6	20·2	13·3
Buckingham	778	62	17·9	40·3	18·6	13·7	4·0
Cambridge	452	46	26·0	67·6	27·6	15·6	11·4
Chester	4,984	210	31·4	36·8	31·6	21·4	12·4
Cornwall	462	30	12·0	17·2	12·3	6·9	4·9
Cumberland	860	80	22·5	31·2	23·1	13·2	6·1
Derby	3,233	119	28·4	30·4	28·4	20·0	12·6
Devon	2,638	198	28·6	45·9	29·3	19·5	14·9
Dorset	632	39	19·2	24·2	19·4	16·0	7·7
Durham	3,152	238	13·0	26·2	13·5	8·0	5·1
Ely, Isle of	113	12	9·1	19·0	9·6	6·2	2·7
Essex	8,399	410	31·3	48·2	31·8	21·9	14·5

Table CXVII.—*continued.*

Area.	1937. Number of Births in Institutions.		1937. Percentage of total legitimate or illegitimate births in area.		Percentage of Total Live Births occurring in Institutions to total live births assigned to area.		
	Legitimate.	Illegitimate.	Legitimate.	Illegitimate.	1937	1932	1927
Administrative Counties together with Associated County Boroughs—*continued.*							
Gloucester	4,439	235	38·3	54·8	38·9	25·3	18·4
Hereford	129	27	8·8	22·7	9·8	7·8	4·3
Hertford	2,451	116	36·6	44·8	36·9	25·6	15·3
Huntingdon	48	10	6·1	20·8	7·0	2·3	1·7
Kent	6,043	310	30·8	38·9	31·1	21·1	14·5
Lancaster	31,684	1,714	43·8	56·4	44·3	31·4	17·0
Leicester	2,705	140	34·0	42·2	34·3	21·5	16·1
Lincoln, Holland	82	12	5·3	16·0	5·8	1·9	1·0
„ Kesteven	342	8	22·3	11·1	21·8	7·7	5·2
„ Lindsey	1,567	123	25·1	33·7	25·6	17·7	5·7
London	41,915	3,121	80·9	98·4	81·9	51·5	35·9
Middlesex	9,690	558	32·9	47·4	33·4	27·1	17·9
Norfolk	1,238	90	17·9	23·6	18·2	12·2	8·2
Northampton	888	70	21·4	45·2	22·3	9·8	5·9
Northumberland	3,470	241	29·9	55·7	30·8	19·2	13·9
Nottingham	2,147	135	19·0	26·8	19·4	11·9	7·2
Oxford	1,112	38	34·1	28·8	33·9	28·8	22·3
Peterborough, Soke of ..	83	9	11·0	22·5	11·6	7·3	4·5
Rutland	21	1	9·1	5·6	8·8	—	0·4
Salop	960	81	26·8	42·0	27·5	18·4	9·4
Somerset	1,310	84	22·2	33·3	22·6	16·7	8·8
Southampton	5,614	377	37·0	50·0	37·7	23·3	21·4
Stafford	4,595	281	18·8	39·0	19·3	13·4	4·6
Suffolk, East	714	41	17·2	19·8	17·3	5·7	4·5
„ West	301	21	21·6	36·2	22·2	34·1	11·4
Surrey	7,824	645	42·4	81·8	44·0	36·1	20·7
Sussex, East	2,200	232	34·2	56·2	35·5	26·2	15·8
„ West	829	101	24·1	56·1	25·7	9·2	9·0
Warwick	8,199	466	32·6	51·5	33·3	26·2	18·9
Westmorland	172	46	20·9	74·2	24·7	16·7	12·4
Wight, Isle of	273	15	27·2	26·3	27·2	11·7	4·9
Wilts	1,388	72	33·8	42·6	34·2	24·8	14·0
Worcester	1,072	62	15·8	28·8	16·2	13·2	3·8
Yorks, East Riding ..	1,634	188	20·4	42·7	21·5	15·8	10·6
„ North „	972	94	12·7	23·9	13·2	10·6	7·3
„ West „	17,237	1,031	35·8	50·3	36·4	24·6	13·0
York, C.B.	285	14	20·3	21·2	20·4	17·7	14·6
Anglesey	8	2	1·4	3·9	1·6	2·8	0·9
Brecknock	18	4	2·6	12·5	3·0	3·6	1·8
Caernarvon	285	37	18·8	38·9	19·9	12·3	5·3
Cardigan	101	15	18·4	29·4	19·3	5·7	3·7
Carmarthen	157	14	6·6	13·7	6·9	2·3	0·7
Denbigh	628	44	28·7	39·3	29·2	7·4	3·9
Flint	374	21	19·6	26·6	19·9	11·8	6·4
Glamorgan	3,324	220	19·4	39·6	20·0	10·7	6·4
Merioneth	49	5	9·4	20·8	9·9	3·5	0·8
Monmouth	652	54	10·5	25·1	11·0	4·8	2·9
Montgomery	177	24	29·3	47·1	30·7	9·2	2·5
Pembroke	67	5	6·0	7·1	6·1	3·6	1·6
Radnor	17	2	6·1	8·7	6·3	3·4	5·6

With regard to the local distribution of births in institutions, it is to be remembered that the basis of classification of births in these tables is the area of occurrence, and therefore differs from that used in other tables in the Statistical Review in which the basis is the area of residence of the mother. The percentage columns show the proportion of births occurring in institutions in an area to the total births assigned to, but not necessarily occurring in, that area. The highest proportions of births in institutions tend to be found in

those areas where the largest amount of lying-in accommodation is available, the areas with more such accommodation attracting cases from those areas that have less. The element of distortion thus introduced will naturally vary according to the size of an area and the extent of its facilities for institutional treatment, but, on average, may be expected to be relatively smaller for the regions than for the counties. London, which records a proportion of 81·9 per cent. in 1937, is quite exceptional ; some 20 per cent. of the births occurring therein belong properly to other areas. Though the percentages shown in Tables CXVII and CXVIII and—apart from those for England and Wales as a whole—do not form an exact measure of the extent to which births occur in institutions in the several areas, their general consistency and relative increase between 1927 and 1937 show that, throughout the country, recourse is now had to institutional treatment much more frequently than it was ten years ago.

Still-births occurring in institutions numbered 11,413, or 46·0 per cent. of the total still-births registered in 1937. The regional distribution was much the same as that of live births; the proportion in London, as with live births, being very much greater than in any other area.

Table CXVIII.—Stillbirths in Institutions, 1937.

Area.	Number of Stillbirths in Institutions.		Percentage of Total Stillbirths occurring in Institutions to total still-births assigned to area.	Percentage of total legitimate or illegitimate Stillbirths in Institutions to corresponding births assigned to area.	
	Legitimate.	Illegiti-mate.		Legitimate.	Illegitimate.
England and Wales	**10,768**	**645**	**46·0**	**45·9**	**47·8**
Regional Summary:					
South-East	3,647	228	56·2	56·4	52·8
North	4,089	243	47·5	47·2	52·3
North I	525	34	35·0	34·5	45·9
„ II	272	14	32·7	32·5	36·8
„ III	1,148	72	51·0	50·8	53·3
„ IV	2,144	123	53·2	53·1	56·4
Midland	1,831	100	41·3	41·0	46·3
Midland I	1,330	81	44·6	44·1	54·7
„ II	501	19	34·3	34·6	27·9
East	303	24	32·5	32·2	36·9
South-West	368	20	35·8	36·2	30·3
Wales	530	30	27·8	27·7	28·8
Wales I	396	23	27·9	27·6	33·8
„ II	134	7	27·4	28·0	19·4
Administrative Counties together with associated County Boroughs:					
Bedford	47	2	37·1	38·2	22·2
Berks.	72	4	46·1	47·4	30·8
Buckingham	15	1	12·4	12·3	14·3
Cambridge	44	1	81·8	81·5	100·0
Chester	279	19	38·1	38·2	35·8
Cornwall	25	1	15·0	15·2	12·5
Cumberland	58	4	42·2	41·1	66·7
Derby	170	3	31·4	32·0	15·8
Devon	137	12	39·9	39·5	46·2
Dorset	38	1	29·8	30·9	12·5
Durham	227	19	22·6	21·8	40·4
Ely, Isle of	13	2	24·6	22·8	50·0
Essex	405	15	43·8	44·1	36·6
Gloucester	263	17	55·2	54·8	63·0
Hereford	13	3	34·0	29·5	100·0
Hertford	109	8	53·7	52·9	66·7
Huntingdon	4	—	12·5	13·3	—
Kent	266	13	39·3	39·2	41·9
Lancaster	1,865	104	56·6	56·3	63·0
Liecester	123	9	44·1	43·0	69·2

Table CXVIII.—*continued.*

Area.	Number of Stillbirths in Institutions.		Percentage of Total Stillbirths occurring in Institutions to total still-births assigned to area.	Percentage of total legitimate or illegitimate Stillbirths in Institutions to corresponding births assigned to area.	
	Legitimate.	Illegiti-mate.		Legitimate.	Illegitimate.
Administrative Counties together with associated County Boroughs —*continued.*					
Lincoln, Holland	5	—	9·1	9·4	—
„ Kesteven	28	1	39·7	40·6	25·0
„ Lindsey	73	11	33·7	32·4	45·8
London	1,601	114	92·0	93·9	71·7
Middlesex	379	18	40·2	40·2	40·0
Norfolk	77	8	31·8	30·9	44·4
Northampton	64	—	39·0	40·3	—
Northumberland	298	15	61·6	62·0	55·6
Nottingham	137	6	30·6	31·1	21·4
Oxford	67	4	57·3	57·8	50·0
Peterborough, Soke of	7	1	25·0	24·1	33·3
Rutland	1	—	11·1	11·1	—
Salop	63	5	41·5	39·6	100·0
Somerset	100	3	44·0	45·7	20·0
Southampton	267	14	46·0	47·1	31·8
Stafford	402	18	36·2	36·2	36·0
Suffolk, East	39	1	27·0	27·5	16·7
„ West	19	—	33·3	35·8	—
Surrey	261	23	47·3	46·0	69·7
Sussex, East	98	4	45·7	46·7	30·8
„ West	47	6	38·4	37·3	50·0
Warwick	536	34	58·0	57·6	64·2
Westmorland	12	—	29·3	30·0	—
Wight, Isle of	13	2	41·7	41·9	40·0
Wilts.	68	3	41·3	41·7	33·3
Worcester	53	4	18·7	18·0	40·0
Yorks. East Riding	124	8	36·5	36·3	40·0
„ North „	78	2	24·7	24·9	18·2
„ West „	1,137	71	51·8	51·7	54·2
York C.B.	11	1	19·0	18·6	25·0
Anglesey	1	—	2·3	2·9	—
Brecknock	7	—	12·7	13·5	—
Caernarvon	30	4	39·5	38·5	50·0
Cardigan	10	1	30·6	30·3	33·3
Carmarthen	20	3	14·5	13·2	42·9
Denbigh	44	—	41·9	42·3	—
Flint	23	—	23·5	23·7	—
Glamorgan	321	16	35·8	35·6	39·0
Merioneth	5	1	15·0	14·3	20·0
Monmouth	48	4	15·0	14·6	23·5
Montgomery	12	1	37·1	38·7	25·0
Pembroke	5	—	9·1	10·0	—
Radnor	4	—	23·5	25·0	—

NATURAL INCREASE.

The excess of live births over deaths registered in England and Wales during the years 1928 to 1937 was :—

1928...	...	199,878	1933...	...	83,948
1929...	...	111,181	1934...	...	120,832
1930...	...	193,384	1935...	...	121,355
1931...	...	140,451	1936...	...	109,528
1932...	...	129,843	1937...	...	100,983

From the comparable series of rates per 1,000 living population given in Table R, it will be observed that, though there is rather greater irregularity in the successive rates of natural increase, they have, over the range of years there given, followed on the whole a similar course to those followed by both birth and death-rates, and have declined with advancing years. The present rate of natural increase is 2·5 per 1,000 population. Lower

rates were recorded in 1918 (0·4) and 1933 (2·1), but, with these exceptions, the rate in 1937 is the lowest so far recorded. It compares with a figure of approximately 10 per 1,000 in the years immediately preceding the war of 1914–18 and over 14 per 1,000 in the period 1876–1880 when the birth-rate was at about its maximum. Stated in these terms the curve of natural increase expresses no more than that the crude birth-rate has hitherto been greater than the crude death-rate, and that the decline in the former has advanced at a greater rate than the fall in the latter. From the general continuity of the series it may be inferred that the number of births will continue to exceed the deaths for some years, and that, apart from the results of migration, the population will continue to increase during such period though, naturally, at a slower pace.

Table CXIX shows for 1931–37 the rate of natural increase in various sections of the country, representing the combined effect of the several sectional birth and death rates. In none of the areas is the rate of increase greater in 1937 than in 1936 and with three exceptions (Remainder of South-East, North III and East) the rates are lower. Attention may be drawn to the large differences between

Table CXIX.—Natural Increase per 1,000 living, 1931–1937.

Decreases are indicated by —

	1931.	1932.	1933.	1934.	1935.	1936.	1937.
England and Wales ..	3·5	3·3	2·1	3·0	3·0	2·7	2·5
Regional Summary—							
South-East	3·4	3·0	2·0	2·6	3·2	2·9	2·8
Greater London ..	3·9	3·5	2·3	2·9	3·6	3·2	3·1
Remainder of South-East ..	2·9	2·3	1·7	2·2	2·6	2·4	2·4
North	3·2	3·4	1·9	3·2	2·7	2·5	2·1
North I	6·1	6·4	4·9	5·2	5·0	4·5	3·9
North II ..	4·2	4·5	3·0	4·1	3·9	3·6	3·4
North III ..	2·7	2·7	1·6	2·9	2·4	1·9	1·9
North IV ..	2·3	2·5	0·8	2·4	1·8	1·8	1·2
Midland	4·6	4·1	2·9	3·9	3·9	3·7	3·6
Midland I ..	4·7	4·2	3·0	4·0	4·0	4·0	3·9
Midland II ..	4·6	4·2	2·8	3·7	3·4	3·3	3·1
East	3·4	2·9	1·9	3·0	2·9	2·3	2·3
South-West ..	1·0	0·8	0·4	0·8	0·9	0·4	—0·1
Wales	3·4	3·2	2·3	3·2	2·7	2·1	1·6
Wales I	4·5	4·2	3·0	4·2	3·6	2·9	2·3
Wales II ..	0·7	0·8	0·1	0·4	0·4	—0·1	—0·4
Density Summary of All Areas outside Greater London—							
County Boroughs ..	3·4	3·5	1·9	3·2	2·9	2·7	2·4
Other Urban Districts	3·1	2·9	1·7	2·7	2·6	2·4	2·2
Rural Districts ..	3·7	3·4	2·6	3·2	3·0	2·6	2·4

the different sections of the regions, namely, North I (Durham and Northumberland), and North IV (Cheshire and Lancashire), and between Wales I (Brecknockshire, Carmarthenshire, Glamorganshire and Monmouthshire), and Wales II (the remainder of Wales) where increase has been changed to decrease. Natural decrease is also recorded, for the first time, in the South-West region.

Comparative figures for natural increase and migration during the period 1931–37 are shown in Table E (Part II, p. 10) for the large geographical regions. The natural increase ranges from 31·7 per 1,000 population in North I (Durham and Northumberland) to 1·8 in Wales II (North, Central and Western Wales). The Northern, Welsh and Eastern regions show an outward balance of migration which varies from 77·2 per 1,000 in Wales I and 49·8 in North I to 11·2 in North II, 7·2 in North IV and 3·4 in the East.

GREAT BRITAIN, NORTHERN IRELAND AND EIRE.

Population.—The first complete census of the United Kingdom was taken in 1821, when the population numbered 20,893,584 persons; during the 100 years 1821–1921 this number increased by about 126 per cent., the sum of the census figures for Great Britain and of the estimated populations of Northern Ireland and Eire in June, 1921, amounting to 47,123,196. Up to the date when the 1931 Census was taken there was a further increase of 4 per cent. The populations of the several portions of the United Kingdom for each census year from 1821 and for individual years from 1898 are set out in Table A (Part II).

Marriages.—The marriages during the year 1937 numbered 420,914 corresponding to a rate of 16·8 persons married per 1,000 of the total population. This rate was 0·2 per 1,000 above the corresponding rate in 1936 and 1·9 above the average rate in the ten years 1921–1930.

Births.—The live births registered in the year 1937 numbered 780,267, and were in the proportion of 15·5 per 1,000 of the total population. This rate was the same as the corresponding rate in 1936 and 3·3 per 1,000 below the average in the ten years 1921–1930.

Deaths.—The deaths registered in the year 1937 numbered 642,884, and were in the proportion of 12·8 per 1,000 of the total population. This rate was 0·3 per 1,000 above the corresponding rate in 1936, and 0·3 above the average in the ten years 1921–1930.

Infant Mortality.—The deaths of infants under one year of age during the year 1937 numbered 48,315, representing a rate of 62 per 1,000 live births. This rate was 1 per 1,000 below that recorded in 1936 and 12 per 1,000 below the average in the ten years 1921–1930.

Table CXX.—Great Britain and Ireland. Vital Statistics. 1921–30 and 1931–7.

——	Great Britain and Ireland.	England and Wales.	Scotland.	Northern Ireland.	Eire.
Estimated Population in the middle of the year 1937 (*in thousands*).					
Males	24,236	19,705	2,397	624	1,510
Females	26,001	21,326	2,580	657	1,438
Persons	50,237	41,031	4,977	1,281	2,948
Marriages.					
1937	420,914	359,160	38,351	8,623	14,780
Persons married per 1,000 living :—					
1921–1930	14·9	15·5	13·8	12·1	9·5
1931	14·9	15·6	13·5	11·9	9·0
1932	14·6	15·3	13·6	11·1	8·8
1933	15·1	15·8	13·9	12·1	9·4
1934	16·2	16·9	15·0	13·0	9·6
1935	16·5	17·2	15·3	13·9	9·7
1936	16·6	17·4	15·3	14·3	10·0
1937	16·8	17·5	15·4	13·5	10·0
Births.					
1937	780,267	610,557	87,810	25,412	56,488
Per 1,000 living :—					
1921–1930	18·8	18·3	21·5	22·1	20·2
1931	16·5	15·8	19·0	20·7	19·5
1932	16·0	15·3	18·6	20·1	19·1
1933	15·1	14·4	17·6	19·6	19·4
1934	15·5	14·8	18·0	20·1	19·5
1935	15·4	14·7	17·8	19·5	19·6
1936	15·5	14·8	17·9	20·3	19·6
1937	15·5	14·9	17·6	19·8	19·2
Deaths.					
1937	642,884	509,574	68,942	19,282	45,086
Per 1,000 living :—					
1921–1930	12·5	12·1	13·7	15·1	14·5
1931	12·6	12·3	13·3	14·5	14·6
1932	12·4	12·0	13·5	14·2	14·6
1933	12·5	12·3	13·2	14·4	13·7
1934	12·0	11·8	12·9	13·9	13·2
1935	12·1	11·7	13·2	14·6	14·0
1936	12·5	12·1	13·4	14·4	14·4
1937	12·8	12·4	13·9	15·1	15·3
Deaths of Infants under 1 *year.*					
1937	48,315	35,175	7,050	1,969	4,121
Per 1,000 live births :—					
1921–1930	74	72	89	81	70
1931	69	66	82	73	69
1932	69	65	86	83	72
1933	66	64	81	80	65
1934	62	59	78	70	63
1935	61	57	77	86	68
1936	63	59	82	77	74
1937	62	58	80	77	73

Table CXXI.

Years.	Total Searches.	Gratuitous Searches.	Searches paid for by Fees.	Certificates Issued.	Amount Received. £	s.	d.
1866 (52 weeks) ..	12,135	—	12,135	10,017	1,860	15	6
1875 (52 weeks) ..	26,356	—	26,356	20,282	3,879	15	6
1885 (52 weeks) ..	36,450	—	36,450	27,682	5,317	13	6
1895 (52 weeks) ..	53,289	—	53,289	35,727	7,200	12	6
1905 (52 weeks) ..	65,142	—	65,142	50,310	9,611	9	0
1906 (52 weeks) ..	64,340	—	64,340	49,429	9,458	6	0
1907 (52 weeks) ..	69,249	—	69,249	53,058	10,194	9	0
1908 (53 weeks) ..	72,370	—	72,370	54,870	10,550	8	0
1909 (52 weeks) ..	132,169	58,626*	73,543	54,674	10,568	8	0
1910 (52 weeks) ..	126,716	51,347	75,369	57,019	10,939	5	6
1911 (52 weeks) ..	140,496	65,491	75,005	56,347	10,875	6	0
1912 (52 weeks) ..	149,752	69,151	80,601	61,143	11,752	6	0
1913 (52 weeks) ..	150,540	71,225†	79,315	60,356	11,613	19	0
1914 (53 weeks) ..	188,040	104,593	83,447	65,817	12,482	11	6
1915 (52 weeks) ..	202,939	118,788	84,151	69,746	13,007	10	0
1916 (52 weeks) ..	303,334	197,669	105,665	88,265	16,379	17	0
1917 (52 weeks) ..	272,199	177,403	94,796	80,374	14,859	14	0
1918 (52 weeks) ..	255,462	146,504	108,958	90,898	16,889	0	0
1919 (52 weeks) ..	301,913	170,670	131,243	107,067	20,017	14	6
1920 (53 weeks) ..	284,194	149,447	134,747	108,684	20,415	0	0
1921 (52 weeks) ..	258,461	131,167	127,294	99,911	18,949	10	6
1922 (52 weeks) ..	263,047	143,088	119,959	90,400	19,028	12	6
1923 (52 weeks) ..	269,822	144,118	125,704	93,701	20,875	16	0
1924 (52 weeks) ..	337,521	178,990	158,531	121,890	27,109	15	0
1925 (53 weeks) ..	488,781	339,790	148,991	115,378	25,610	2	6
1926 (52 weeks) ..	541,916	407,687	134,229	105,560	23,305	6	6
1927 (52 weeks) ..	1,002,345	854,084	148,261	115,009	25,733	16	0
1928 (52 weeks) ..	600,678	452,953	147,725	114,731	25,678	17	0
1929 (52 weeks) ..	550,742	402,853	147,889	116,768	25,903	18	0
1930 (52 weeks) ..	1,207,344	1,053,047	154,297	121,549	26,964	12	0
1931 (53 weeks) ..	651,414	509,267	142,147	109,163	24,323	1	6
1932 (52 weeks) ..	598,624	464,985	133,639	104,420	23,086	13	0
1933 (52 weeks) ..	591,668	455,664	136,004	108,050	23,790	11	0
1934 (52 weeks) ..	562,849	424,943	137,906	111,265	24,378	14	6
1935 (52 weeks) ..	591,056	443,783	147,273	119,351	26,221	9	6
1936 (53 weeks) ..	630,842	473,616	157,226	128,572	28,219	19	3
1937 (52 weeks) ..	662,195	494,045	168,150	138,401	30,336	16	0

* Including some searches made in 1908.

† In addition, there were 91,917 gratuitous searches made for National Insurance Audit purposes.

BIRTHS AND DEATHS AT SEA.

Marine Register Book.—In accordance with the Births and Deaths Registration Act of 1874 and the Merchant Shipping Act of 1894, Commanding Officers of ships trading to or from British ports are required to transmit returns of all births and deaths

occurring on board their ships to the Registrar-General of Shipping and Seamen, who furnishes certified copies of such returns to the Registrars-General of Births and Deaths for England, Scotland, Northern Ireland and Eire. Similar returns are furnished to the Registrars-General of Births and Deaths by Officers in command of His Majesty's ships. The returns of births and deaths at sea received by the Registrar-General constitute the "Marine Register Book." During the year 1937 this register was increased by the addition of 91 entries of birth and 1,189 entries of death.

REGISTRATIONS OF BIRTHS, DEATHS AND MARRIAGES.

Progress of Registration.—The names in the alphabetical indexes of births, deaths and marriages recorded in the national registers of England and Wales were increased during the year 1937 by 1,838,451, this addition raising the total of names in the indexes, which at the end of 1937 embraced a period of 100½ years, to 170,305,164 (Table T).

Searches and Certificates.—Besides the certified copies of the registered births, deaths and marriages kept in England and Wales pursuant to the Registration Acts, a large number of other registers and records are deposited in this Office under statute or other arrangement. A revised list of these various registers and records will be found on pages 149–155 of the Review for 1925. Searches may be made in any of these registers, and certificates obtained, on payment of the prescribed fees.

Table CXXI affords an indication of the extent to which the copies of the records kept in this Office have been utilized by the public for legal evidence of births, deaths and marriages since 1866.

The 494,045 gratuitous searches during 1937 comprise 41,274 searches made for the purpose of verifying the ages of persons aged 70 and upwards and certain blind persons claiming old age (non-contributory) pensions and 247,972 for persons claiming pensions under the Widows', Orphans' and Old Age Contributory Pensions Acts, 1925 and 1929; 83,837 for verification purposes in connection with claims to widows' and orphans' pensions under those Acts; 57,915 to assist dependants of men of H.M. Forces to produce evidence of marriage and of the births of children in connection with claims to naval and military pensions, separation allowances, etc., and to verify the ages of certain classes of youths and men in connection with service in the Army, Navy and Air Force; 44,886 for verification of age, etc., in connection with National Health and Unemployment Insurance; and 18,161 for other public purposes.

Offences against the Registration Acts.—In 1937 six persons, on prosecution by order of the Registrar-General, were convicted of

offences in connection with registration. The offences for which convictions were obtained were as under :—

For failing to register a birth 6

Proceedings were taken, also, by the Director of Public Prosecutions or by the police under the Perjury Act, 1911, in a number of cases where false information had been given (1) by an informant in regard to the particulars required to be registered in an entry of birth, stillbirth, marriage or death or (2) for the purpose of procuring marriage.

RE-REGISTRATION OF BIRTHS UNDER THE LEGITIMACY ACT, 1926.

Under the Legitimacy Act, 1926, an illegitimate child of parents who married after the birth of the child was, subject to certain conditions, legitimated; and the Act contained incidental provision to enable the births of such children to be re-registered. During the year 1937 authority was issued for the re-registration of the births of 2,778 children, being 208 less than the preceding year.

The number of authorities issued during each quarter is as follows :—

Quarter.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937
March ..	1,265	1,401	1,075	996	981	854	752	722	774	742	695
June	1,256	1,170	1,105	1,001	908	762	724	777	790	843	699
Sept. ..	1,381	1,242	933	1,006	797	709	718	798	701	685	628
Dec. ..	1,593	1,070	933	986	825	819	774	798	691	716	756
Totals ..	5,495	4,883	4,046	3,989	3,511	3,144	2,968	3,095	2,956	2,986	2,778

As the numbers of re-registrations during the last few years, depart little from an average of about 3,000, it would appear that the numbers have now reached a comparatively steady state, and that the accumulation of cases reflected in the figures for the earlier years 1927–31 has been disposed of.

ADOPTION OF CHILDREN UNDER THE ADOPTION OF CHILDREN ACT, 1926.

The Adoption of Children Act, 1926, provided for the legal adoption of children by Order of the Court, and established a system of registration of such adoptions in an Adoption Register to be kept by the Registrar-General. The number of children whose adoption was registered during 1937 is 5,553. Table CXXII furnishes an analysis of the Adoption Orders made by reference to the several classes of Courts and the quarterly distribution of the total figure.

It will be observed that the numbers of adoption orders show steady increase since 1931, that the majority of the orders are made by courts of summary jurisdiction (91 per cent. in 1937) and that there is a general preference for the fourth quarter (the only exception being in 1933).

Table CXXII.

Year.	Number of Adoption Orders dealt with.				Corresponding number of children, *i.e.*, Entries made in Adopted Children Register.				
	Total.	High Court.	County Court.	Court of Summary Jurisdiction.	Year's Total.	March Quarter.	June Quarter.	September Quarter.	December Quarter.
1927 ..	2,943	133	184	2,626	2,967	329	990	774	874
1928 ..	3,278	124	236	2,918	3,303	851	844	705	903
1929 ..	3,294	72	224	2,998	3,307	722	787	857	941
1930 ..	4,511	74	317	4,120	4,517	1,084	1,196	983	1,254
1931 ..	4,119	68	274	3,777	4,127	873	1,049	1,046	1,159
1932 ..	4,465	38	264	4,163	4,467	1,073	1,178	1,000	1,216
1933 ..	4,524	61	262	4,201	4,528	1,029	1,258	1,004	1,237
1934 ..	4,756	45	290	4,421	4,758	1,063	1,265	1,075	1,355
1935 ..	4,844	64	342	4,438	4,852	1,174	1,261	1,073	1,344
1936 ..	5,180	62	372	4,746	5,185	1,215	1,230	1,320	1,420
1937 ..	5,547	78	413	5,056	5,553	1,183	1,535	1,283	1,552

PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS.

The returns of Parliamentary and Local Government Electors published in Tables U and V summarise the Register of Electors compiled under the Representation of the People (Equal Franchise) Act of 1928 in respect of the qualifying period of three months ending on the 1st June, 1937.

The particulars have been taken from statements furnished to the Registrar-General by the Registration Officers of the several areas, or in the case of a University forming the whole or part of a University constituency, by the Chancellor, Registrar or other officer dealing with Parliamentary registration.

Registration Officers were instructed that the return of Parliamentary Electors should be the net total of individual Parliamentary Electors in each constituency, all duplicate entries being omitted from the count. In the case of Local Government Electors the number of names on the register was to be given. The instructions further directed that the names of " out voters " (that is, persons whose names appear twice in the Register, by reason of a claim under Rule 24 of the First Schedule to the 1918 Act) should be counted once only in respect of that qualification.

Table U refers to Parliamentary electors, and shows for each Parliamentary constituency in England and Wales, including the University constituencies, the numbers of males and females on the

Register, and also the numbers registered in respect of business premises qualifications and the numbers on the absent voters' list.

Table V refers to Local Government electors, and shows the numbers of each sex registered in respect of every local government area, *i.e.*, county borough, metropolitan borough, municipal borough, urban district and rural district in England and Wales.

The figures for the whole country are summarised in Table CXXIII and are shown in conjunction with the figures of previous Registers made since the passing of the 1918 Act.

It will be observed that the sex distribution of the electorate which, in respect of the Parliamentary Register, was formerly in the proportion of about 1·3 men to each woman, was completely altered by The Representation of the People (Equal Franchise) Act of 1928. That Act, which placed women on the same footing as men in regard to the franchise, added about 4½ million women to the Parliamentary electorate and nearly 1¼ million to the Local Government electorate, and as a consequence women now outnumber men by approximately 12 per cent. in the case of each.

Table CXXIII.—Parliamentary and Local Government Electors, 1918-1937.

Register.	Parliamentary Register (including University Constituencies).					Local Government Register.		
	Persons.	Males.	Females.	Business Premises Qualifications. — Males only up to 1928. Persons from 1929 (included in Cols. *b-d*).	Persons on Absent Voters' List (included in Cols. *b-d*).	Persons.	Males.	Females.
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*k*
1918 (Autumn)	17,222,983	10,281,054	6,941,929	159,013	3,362,028	13,930,130	6,998,665	6,931,465
1919 ,,	17,465,638	10,234,887	7,230,751	205,461	1,157,061	14,361,123	7,176,019	7,185,104
1920 ,,	17,584,552	10,176,750	7,407,802	203,471	254,866	14,712,453	7,364,912	7,347,541
1921 ,,	17,795,784	10,237,344	7,558,440	194,737	185,227	15,019,348	7,527,861	7,491 487
1922 ,,	18,001,692	10,312,248	7,689,444	199,904	162,901	15,322,625	7,700,108	7,622-517
1923 ,,	18,388,833	10,498,179	7,890,654	208,694	151,953	15,691,962	7,873,461	7,818,501
1924 ,,	18,806,842	10,719,922	8,086,920	211,257	165,564	16,015,033	8,007,384	8,007,649
1925 ,,	19,167,275	10,897,545	8,269,730	217,509	167,406	16,345,290	8,157,607	8,187,683
1926 ,,	19,346,954	10,982,128	8,364,826	206,199	161,460	16,574,549	8,284,181	8,290,368
1927 ,,	19,585,972	11,094,031	8,491,941	205,538	155,436	16,865,666	8,444,718	8,420,948
1928 ,,	19,866,649	11,226,396	8,640,253	205,793	154,432	17,179,487	8,608,017	8,571,470
1929 (Spring)	25,095,793	11,866,794	13,228,999	371,594	174,731	18,620,395	8,825,225	9,795,170
1930 (Autumn)	25,730,507	12,101,108	13,629,399	364,762	174,270	18,879,147	8,905,768	9,973,379
1931 ,,	26,135,944	12,288,852	13,847,092	365,090	174,274	19,156,018	9,036,870	10,119,148
1932 ,,	26,439,713	12,440,109	13,999,604	367,684	172,234	19,418,156	9,160,409	10,257,747
1933 ,,	26,715,526	12,578,340	14,137,186	365,734	168,684	19,659,678	9,274,801	10,384,877
1934 ,,	27,031,162	12,735,465	14,295,697	367,912	166,102	19,984,911	9,428,765	10,556,146
1935 ,,	27,395,836	12,911,650	14,484,186	367,797	164,751	20,352,389	9,602,772	10,749,617
1936 ,,	27,723,561	13,067,627	14,655,934	366,835	165,911	20,712,367	9,770,974	10,941,393
1937 ,,	27,948,139	13,175,851	14,772,288	365,159	161,773	21,067,804	9,936,477	11,131,327

Including a certain amount of plural representation in the case of those persons registered in more than one constituency by reason of their possessing the necessary residence or business qualification,

or being entitled to be registered in respect of a University constituency, the total Parliamentary electorate of 27,948,139 represents 68·1 per cent. of the estimated total population, or 66·9 per cent. of the male and 69·3 per cent. of the female population; in the case of the rather more restricted Local Government franchise, the numbers are somewhat less and the proportions correspondingly lower, the total electorate being 51·3 per cent. of the whole population, or 50·4 per cent. and 52·2 per cent. in the case of males and females separately.

Of the total of the Parliamentary Register, the bulk, viz., 27,829,214, represents the aggregate voting strength in the 509 geographical constituencies into which England and Wales is divided, the balance of 118,925 representing the five University constituencies. Eleven of the Boroughs, and three University constituencies, however, each return two members, so that the total representation in Parliament is by 528 members, 520 in respect of the geographical divisions, with an average electorate of 53,518 per member and eight in respect of the Universities, with an average electorate of 14,866.

MISCELLANEOUS.

Other tables appearing in Part II of the Statistical Review which have not formed the subject of special comment in the foregoing pages are :—

Table W, showing the Population, Births, Deaths, Infant Mortality and Marriages, with Rates in British Islands and Dominions, 1937.

Tables X and Y, showing the census populations respectively, of the British Empire, Dominions, etc., and of Foreign Countries.

Appendix, showing changes in boundaries of various local government districts and the areas and populations involved.

WEATHER OF THE YEAR, 1937.

ENGLAND AND WALES.

(Contributed by the Air Ministry.)

The year 1937 was distinguished by a deficiency of sunshine It was wet over the country as a whole, the general rainfall of England and Wales being 111 per cent. of the average for the period 1881–1915. Other notable features were the exceptional rainfall during the five consecutive wet months January to May, the heavy snowstorms of February 27th–28th and, in the north, of March 11th–13th, the severe floods in the Fenlands around the middle of March,

the coldness of March, the deficiency of rainfall during the six successive dry months June to November, the occasional severe thunderstorms during the summer months, the frequent and sometimes thick fog in November and December, and the considerable frost and snow of the period December 5th–20th.

Although the general rainfall exceeded the average, less than the average occurred over most of north-west England, Wales, North Devon and in small areas elsewhere. Falls of rather less than 80 per cent. occurred in a large part of Lancashire and the English Lake district and around Blaenau Festiniog (Merionethshire). More than 120 per cent. was received in large areas in the east and south and in somewhat smaller areas in the north-east. The incidence of rainfall in England and Wales was unprecedented; the total rainfall for the first five months was greater than in any similar period back to before 1870, while a deficiency was recorded in each of the next six months. Intense falls of rain, associated with thunderstorms, occurred over an unusually wide area on July 15th; there was a belt of heavy rain of more than two inches which stretched almost continuously from Somersetshire to Lincolnshire. The heaviest individual falls reported on that day were 5·76 in. at Waltham-on-the-Wolds (Leicestershire), 5·47 in. at Tytton Hall, Wyberton (Lincolnshire) and 5·46 in. at Black Sluice, Boston (Lincolnshire).

Mean temperature for the year slightly exceeded the average. Marked deviations from the average occurred at certain periods; March was unusually cold as was also the period December 5th–20th. On the other hand April was mild and August warm; February was also mild, particularly in the south; a warm spell occurred from May 23rd–30th. The highest temperatures of the year were widely recorded in the early part of August; 90° F. was reached in London (Camden Square) on the 6th, and exceeded locally in south-east England on the 7th.

The deficiency of bright sunshine was considerable, the percentages of the average for the districts ranging from 84 in England, E. to 92 in England, N.W. and England, S.E. and 93 in the Channel Islands. At Shoeburyness and Cranwell (Lincs.) the totals were the lowest since sunshine records were first taken in 1919 and 1921 respectively. The months April and July were notably dull in all districts, with roughly 66 and 71 per cent. of the average sunshine respectively. On the other hand August was a sunny month in most districts and, compared with the average, November was also sunny in many places, but sunshine was very variable in November, probably owing to the incidence of fog. In north-east England, February was unusually sunny.

Further information.—Tables relating to meteorological elements are given in Part I (Tables 30–32). A description of the weather of each month appears in the Quarterly Return of the

Registrar-General and a summary of the observations at Greenwich for each month of the year appears in Table XI of the Return for the fourth quarter.

Charts showing the distribution of pressure, temperature, sunshine and rainfall for the year, together with summaries of the observations at numerous stations will be found in the Annual Summary of the Monthly Weather Report issued by the Meteorological Office.

A list of the publications of the Meteorological Office will be found in " List M " issued by H.M. Stationery Office.

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